

The Australasian MANUFACTURER

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Saturday, November 11, 1950.

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"REST ON YOUR ARMS"

(By Ron Richardson)

The views expressed in articles published in this section are those of the contributors and not necessarily those of "The Australasian Manufacturer." They are selected for their interest value, whether controversial or not, and the comments of readers on the subject discussed are always welcomed by the Editor.

TO-DAY, November 11th, for two minutes only, the pattern of life halts, and man is again carried back swiftly over the years in unspoken tribute to the fallen of two world wars.

Just for this brief space, Time's softening effect is lost, and man suffers by his remembrance. This gesture is purely contemporary in spirit. Throughout the ages, and ever limited by the range of his experience, man has paid this silent tribute. A century hence, and he may well be doing the same thing, this time perhaps in respect of some tragic circumstance as yet beyond his power of conception.

Therefore, while he pauses now, and remembers, there must surely

intrude into his consciousness the tiniest suspicion that perhaps all these sacrifices were futile. The very threats that men gave their lives to eliminate—and no man can give more—are present still, and more potent now than ever. The world is seeking anxiously, casting about in what amounts almost to desperation, for a solution to this eternal problem.

But I adhere firmly to the belief that the only satisfactory answer to most of the pressing problems—social, political, or economical—of any selected period lies in the chronological progress of civilisation alone, and all that such a progress implies.

We have been told, and continue to be told, that history repeats itself, and there is more than just

a bare modicum of truth in that ageless reiteration. However, it is necessary for us to be reminded constantly of this fact, for in the main our vision is shortened and influenced by the limitation of our life span. We see things through the restricted orbit of our own experience, and because we are unable to comprehend any appreciable change in matters of world importance, our outlook becomes unduly pessimistic.

Any problem that is of a national or even wider character needs time, in its broadest meaning, to bring about an effective solution. We should remember that when measured against the destiny of a nation, the few score years we may hope or expect to live and possibly devote to the solution of any large-scale problem, is hopelessly inadequate as a yardstick by which to assess values or results.

It would be rare, indeed, to find any phase, international in character, that has been developed or resolved definitely within the space of a bare generation or two. When we look back into the past and examine the problems that have arisen since the beginning of time—we find the very same problems confronting us to-day. They may be in different guise, but many of them still retain their original form, despite the few thousand odd years that have elapsed since their first appearance.

Of them all, war and the constant threat of war is unquestionably the most pernicious. Who the "enemy" of the moment may be is not in the least important here. In any case, the choice of "enemies" is limited, and war against any given nation at a given period is usually but the smouldering reaction to a previous conflict with the same nation a century or more ago. As a matter of historical interest, Britain went to war with Russia on the 28th of March, 1854, an incident most of us have very conveniently forgotten. The "enemy" being fought then had a different name to the potential one of to-day, but it was still Russia, communist or otherwise, and to the people of that period, that particular war with its attendant hardship and oppression must have been every whit as real and ab-

horrent as the aftermaths and potentialities that confront us to-day. Death is still death, whether it be at the point of a rusty bayonet or through the devastating blast of an A-bomb, and we are obliged to remember those earlier wars took their toll also.

Yet the edges of our consciousness are so blunted by time that we think that what is happening to us to-day is unique. Comparatively, it might be, but proportionately—no. And in a hundred years' time, to-day's upheavals will suffer by comparison, too.

War and oppression is not merely the unwanted child of any particular century. Rather it is the ubiquitous Methuselah of existence itself. Even slavery, which has distressed and claimed the attention of reformers since the beginning of time, is still with us. It will be overcome—it must be—along with all other obstacles to a peaceful civilisation, but to be able to say when this will be effected is beyond the power of human prediction.

In the meantime, the world goes on, repeating its cycle of events, and thus vindicating the historians who warn of this constant repetition; but whether nations realise it or not, they are slowly and surely benefiting from the lessons of previous experience. Almost three thousand years ago, Plato was at war with sceptical theories that denied the possibility of a common good. There have been many following him, maintaining the same stand, and only when the separate nations are able to overcome their geographical, political, and racial barriers, and eventually exhaust their fund of possibilities for conflict, will something resembling peace on earth prevail.

Man always has been essentially a social creature, and he gives the best of himself in a well ordered state. This, in turn, is brought about only by the application and practice of those principles that take into consideration the universal flavour of the term, "the common good." Once man learns to recognise his limitations, then his efforts to create a better world can be adjusted to suit his new conception of time, and he will begin to strike at the root of all trouble,

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which exists principally in the individual.

Conflict is neither inevitable nor necessary. It threatens constantly, we know, but like the inevitability with which scientific discovery and progress has forged ahead, so must man's innate common-sense and desire for peace come to his assistance. No single remedy can ever hope to achieve this result. It is every nation's responsibility to overhaul itself internally and externally, and to set about the task of creating a well ordered state.

Many nations to-day are close to achieving this, yet still continue to be unwilling participants in world conflicts because their geographical and political smallness prevents them from steering clear of issues not of their own choosing.

The desire for peace springs from the hearts of the common people. It is universal, this desire, yet always seems to be pushed tragically just beyond reach. To say that people of differing race and creed cannot exist in harmony is folly; every where we have the evidence of peaceful and successful absorption of mixed communities. We need look no farther than amongst our own small but growing percentage of New Australians to realise how earnest people are in this respect, how ready to help the interests of their community, how anxious to become citizens. Racial and other barriers quickly

crumble when opposed to the peaceful designs of common people. People want peace, even if it means having to fight for it, and if we could charge that intention as the sole reason for war, then there might be some justification and less futility in the sacrifices that war demands. Lacking even that excuse, we just go on and suffer, which is why to-day we once more halt and salute the spirit of those who didn't return.

To-morrow, we forget, temporarily, in the urgency of our own day to day affairs. We ask, fearfully, will there be more sacrifices, more halts in life to embrace them, more sorrow and misery to mothers and families and communities? We know now, by bitter experience, the answer to that, and if our lips are reluctant to frame that answer, it is because our hearts revolt at the lack of reason and necessity behind it all.

All we can do to-day is to accept the unavoidable. And while we are accepting it, we can at the same time be making every effort to do something worthwhile, something that will be a tangible contribution towards a general peace that many of us will never live to enjoy. Man's destiny is in man's hands, ever flexible, waiting to be shaped according to man's wish. So, rest on your arms now, and do something for those who follow.

On Our Bookshelf

"The Australian Commercial Dictionary"

Confucius say:

"For one word a man is often deemed to be wise, and for one word he is often deemed to be foolish. We ought to be careful indeed in what we say."

This remark, numbered among these which the venerable old Chinese really did make, is quoted by R. Keith Yorston in the introduction to the second edition of "The Australian Commercial Dictionary", a selection of accounting, business and legal words, phrases and abbreviations assembled and explained with the able assistance of associate editors L. Goldberg, D. M. Hocking, W. Paul and J. P. C. Watson.

This 392-page work is on encyclopaedic lines and contains much matter of general interest and value. The laws, legal systems and legal expressions, says Mr. Yorston, are by no means identical in the various States of the Commonwealth, and thus legal terms have been defined to give the non-lawyer as short and accurate a description as possible.

In preparing this second edition, the editors have taken the opportunity to include many additional definitions, expand others, and incorporate a number of suggestions made by readers of the earlier work. With a view to in-

creasing its value, a number of statutory definitions have been included from Acts of Parliament.

"The Australian Commercial Dictionary", which should find a ready place on the bookshelves of accountants, students of commercial subjects and business men, is published by The Law Book Company of Australasia Pty. Ltd.

GRAPPLING WITH STEEL PROBLEMS.

Australia is, indeed, being forced to adopt drastic measures to keep her industries supplied with steel, curtailment of production of which is due in the main to coal shortages. First, the Federal Government is considering the air-freighting of steel out of Newcastle, and second, it is urging merchants to import as much iron and steel as possible. The first proposition was announced in the House of Representatives by the Minister for Supply, Mr. Beale, who pointed out that a large build-up of steel is lying at Newcastle because ships are not getting it away fast enough; and the second by the Minister for National Development, Mr. Casey, who declared in the House that he can see no relief to the existing iron and steel shortage and urged that, meantime, as much as possible should be imported.

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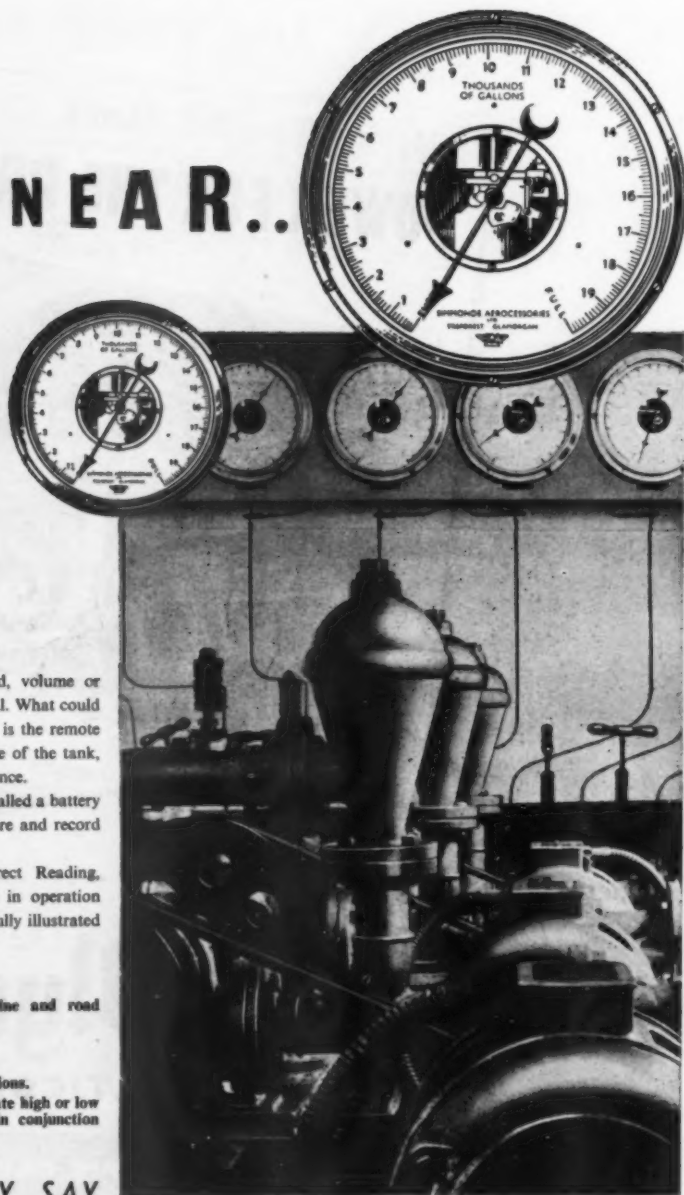
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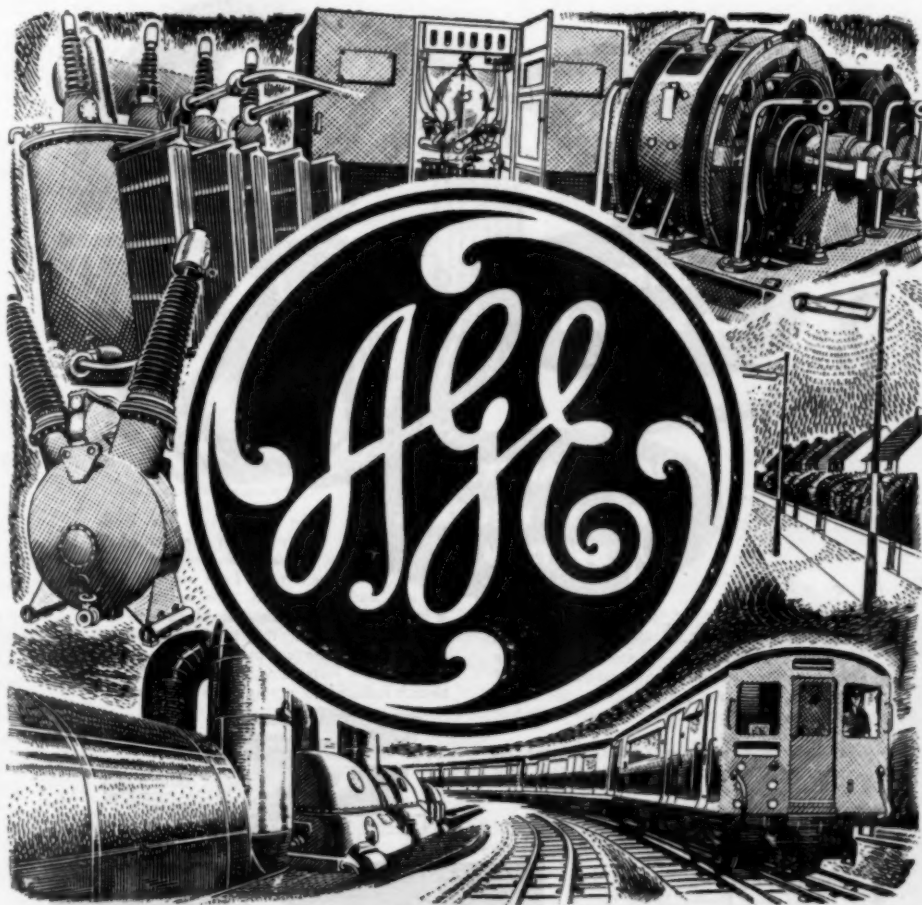
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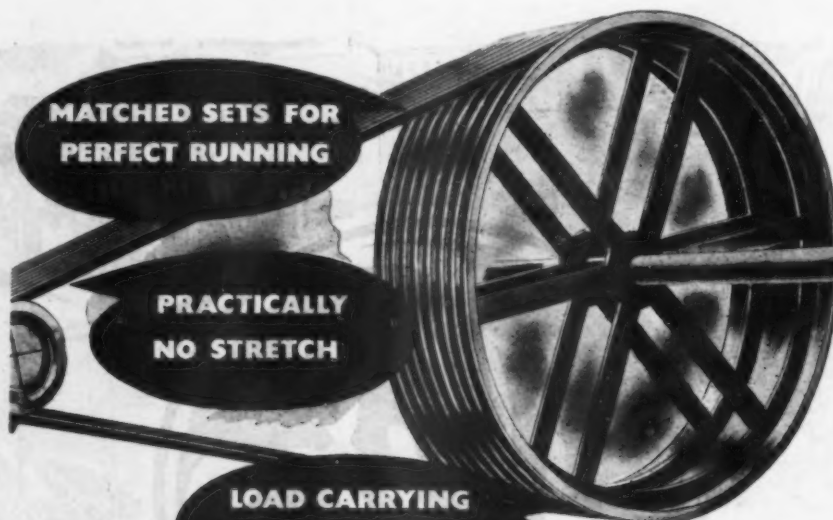
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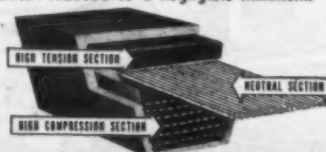
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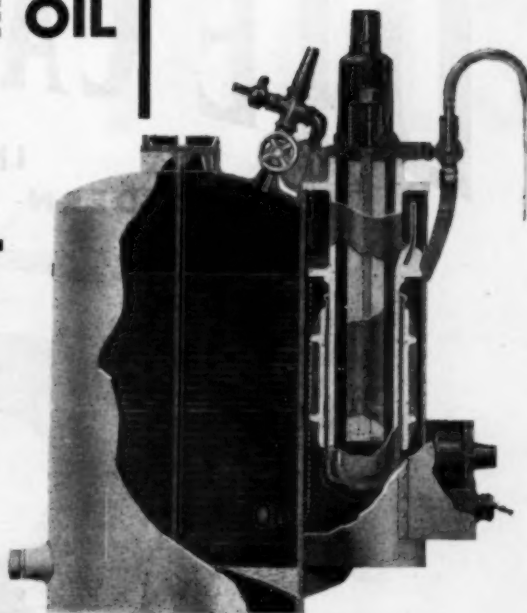
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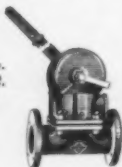
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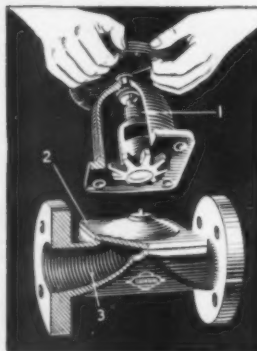
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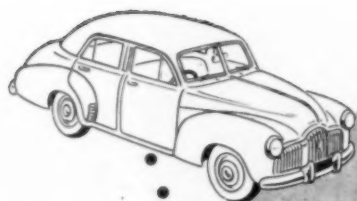
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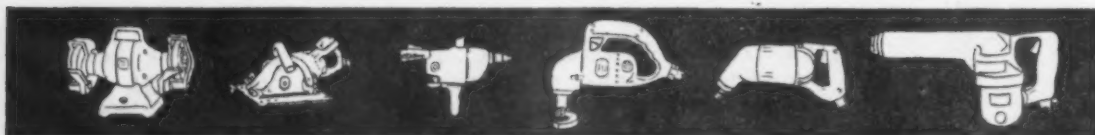
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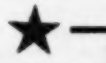
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PAGE FIFTEEN NOVEMBER 11, 1950.



Essential of Industrial Progress Australia's Urgent Need of Increased Supplies of Coal

In the plethora of recent discussions emphasising Australia's need of greater production, there has been unanimity on the contention that the attainment of this nationally significant objective is dependent, in the final analysis, on the ready and continuous availability of adequate supplies of coal. For coal is to the industrial organism what blood is to the human. It animates and vivifies the body industrial just as blood animates and vivifies the body human.

THE most important question with which Australia has to grapple is, accordingly, the boosting of the output of her coal mines.

The urgency of the issue may be gleaned from the fact that, in the opinion of experts, the lag in coal production is destined to be one of the most inherently dangerous aspects of the national economy for many years to come.

The Joint Coal Board has estimated, for instance, that Australian requirements of New South Wales coal for the present year at 15,800,000 tons. "Fulfilment of the target production for the year," it pointed out, "would have required capacity-rate production for the full 49 working weeks, allowing no margin for abnormal wet weather or breakdown losses. Capacity production at a weekly rate of about 325,000 tons would have provided 15,900,000 tons this year, or one per cent. more than actual requirements."

Unfortunately, however, things did not work out like that. Rather was the position that up to the middle of August, 1950, with over 60 per cent. of the available coalmine working year gone, only 47 per cent. of the year's total coal needs had been produced, output to that date totalling 7,454,003 tons. "In order to produce the remaining 8,346,000 tons before the miners go on holiday," the Board continues, "New South Wales mines would have to produce about 440,000 tons a week for the rest of the year—a figure which is clearly impossible under present conditions."

Major deterrents to the production of higher tonnages are, of course, the ever-recurring strikes, strikes which have meant that, since 1943, New South Wales miners have never worked more than 88 per cent. of available working days. The colossal proportions of the disputes are apparent from the fact that during 1948, 474,600 man days were lost, and that in 1949, 2,800,000 tons of New South Wales coal were lost—this figure representing 26 per cent. of Australia's coal output and being valued at £4,000,000.

The nation is endeavouring to overcome the coal lag per medium of mechanisation. To this end, the Joint Coal Board is putting forward special efforts to introduce into the coal-mines of Australia the latest and

best in coal-mining apparatus. Recently, for instance, it imported from the United States a mighty mechanism which can cut coal from the face of the seam, break it in several places, and finally load it into steel trucks. Its maximum capacity is 600 tons in seven hours, requiring approximately six men for its operation. Mechanisation in one form or another is proceeding steadily throughout the whole industry. It is, moreover, at one and the same time increasing both output and efficiency. For example, in the period 1923-1929, when less than 12 per cent. of the coal was machine-cut, an average of 23,443 men were needed to produce 10,780,000 tons of coal. From 1942 to 1947, on the other hand, only 16,919 men were required to produce 11,295,000 tons—the increased output undoubtedly being due in the main to increased mechanisation.

From the point of view of this journal, the most serious aspect of the chronic coal shortage is its effect on manufacturing production. It has been shown, for example, that coal stocks at the great iron and steel works—suppliers of the basic materials to the industries making machines and machine tools; locomotives; ships; aeroplanes; and a thousand and one general engineering products—were never sufficient for more than eleven days' normal consumption in 1948; and sixteen days' consumption in 1949. Obviously, this grave and continued shortage is the main contributing factor to the restricted industrial output which is the most serious danger confronting this Commonwealth.

As a matter of fact, every facet of the coal situation is to-day engaging the earnest attention of the nation's industrial and political leaders. Colliery owners, working in collaboration with the Joint Coal Board, are installing the latest coal-cutting equipment. Every conceivable effort is being made by the Joint Coal Board to improve the conditions of mine-workers. The Government of New South Wales is endeavouring to eliminate the bottlenecks in coal haulage in order to keep supplies moving steadily forward to the waiting industries. A recent conference of Federal and State officials agreed that the two following moves should be taken forthwith:—

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AGENTS: H. W. Woods Pty., Ltd., Melbourne; O. A. Farr, Adelaide; L. P. Harrison & Co., Brisbane; H. Stone, Ltd., Perth.

- (1) The purchase of coal hoppers from the United States to increase coal output.
- (2) The building of new roads, adjacent to new open-cut mines, to facilitate the transport of coal.

In addition, the New South Wales Government has asked the Commonwealth for 1,000,000 dollars for the purchase of Diesel engines. "If the State gets the Diesel engines," said New South Wales Minister for Transport, Mr. Sheahan, "it will use them to speed up the coal haulage from the northern and western New South Wales coalfields."

Australia is rich in coal. She is dependent on it, moreover, for 67 per cent. of all power generated within her borders.

A nation-wide effort must be made, therefore, to procure additional quantities of this first essential of manufacturing progress and prosperity. Every possible step must be taken to improve human relationships; to modernise production methods; to mechanise where mechanisation is practicable; to speed up coal transport.

Thus will industry's blood flow in a steady stream through the vast organism.

Pithy Jottings of Industry and Industrialists

NEW BASIC WAGE RULINGS.

The concluding days of the past week saw the passing by the House of Representatives and the Senate of a Bill to end the recent deadlock in the basic wage proceedings. The amending legislation is to enable the Arbitration Court, in the absence of the Chief Judge, Mr. Justice Kelly, to deal with union applications for a starting date of the new basic wage. The Minister for Labour, Mr. Holt, stated: "The Bill provides that Mr. Justice Foster and Mr. Justice Dunphy will complete current proceedings. Where the two judges agree, their decision will be final. The normal court of three judges will deal with any issues on which the two judges cannot agree. We want to ensure that wage-earners affected by the basic wage case can receive whatever benefit accrues to them without delays due to procedural issues of doubt on technical questions." As previously announced in these columns, the new basic wage, including the standardised prosperity loading of 6/- and 1/- week increase, is to operate from the first pay period in December.

METER FIRM'S NEW PERTH FACTORY.

A new factory to manufacture water meters is being erected in Perth by Dobbie Dico Meter Co. Ltd., of Adelaide.

The firm supplies almost all of the water meters used by S.A. and W.A. Governments. Complete meters, including castings, will be made in Perth. Until now the meter mechanisms have been made in Adelaide and the castings machined and meters assembled in Perth.

CARR FASTENER CHIEF TO VISIT N.Z.

Mr. F. A. Pattenden, managing director of Carr Fastener Co. of Aust. Ltd., left Sydney on the Wanganella on November 2 on a month's visit to New Zealand. He will be accompanied by Mr. A. J. R. White, the Carr Fastener Co.'s radio expert, who will look over the radio trade while Mr. Pattenden looks over the distributors.



Mr. M. A. Potts, manager of the recently-opened Newcastle branch of Gibson, Battle & Co. Ltd., at 262 Hunter Street. Prior to this appointment, Mr. Potts was for some years manager of the Diesel Engineering Department of the same company.

INTERNATIONAL HARVESTER CO. DIRECTOR RETIRES.

Mr. Charles E. Cavanagh, formerly a director and treasurer of International Harvester Co. of Australia Pty. Ltd., has retired after 46 years with the company. Mr. Cavanagh's position as treasurer is now incorporated with that of general auditor and will be under the control of Mr. G. F. Jasper, who recently arrived from the company's headquarters in U.S.A.

NEW SALES MANAGER FOR SHELL CO.

The appointment of Mr. L. N. Gordge as sales manager for Australia and the Pacific Islands has been announced by the Shell Co.

Mr. Gordge has been associated with the oil industry for 25 years. Since joining the Shell Co. he has been accountant, sales superintendent, manager of Pacific Islands trading, sales manager for N.S.W., and manager of the company's Victorian branch.

He recently returned from a business tour of England, Europe and America.

DEATH OF PROMINENT S.A. PAINT MAN.

Mr. J. A. Errington, who for 30 years until June 30, 1950, had been manager of the paint department of Clarkson Ltd., Rundle Street, Adelaide, died on October 5. The funeral at Centennial Park was attended by quite a number of master painters, as well as by directors and staff from Clarkson Ltd., together with Mr. E. H. L. Sweeney, general manager of Aus-

tralasian United Paint Co. Ltd., and several members of the A.U.P. and Muralo staffs.

Mr. Errington, who was 62, had been working on a part-time basis because of the state of his health and was away from work altogether for the last three weeks before his death.

BEARING SERVICE EXTENDS RANGE.

Bearing Service (Holdings) Ltd., intended to increase its stocks and range of anti-friction bearings, the chairman, Mr. R. H. Thomas, told shareholders at the company's recent annual meeting.

Expansion of the company was in line with the growing demands of Australian industry.

Although the probability of another world war in the near future was now considered less likely than a few months ago, regular supplies against this contingency had been arranged in the U.K. and U.S.

CAMELEC LTD., CHANGE OF ADDRESS.

Camelec Ltd., manufacturing engineers, have changed their address since the printing of Volume XIX of "The Australasian Manufacturers' Directory" and are now at 77 Morphett Road, Camden Estate, Adelaide, S.A. The company transferred to Camden Estate from its old address at Holbrooks Road, Underdale. Automotive electrical equipment and automotive hardware are manufactured by Camelec Ltd.

ALKALINE BATTERIES IN GROWING TASMANIAN INDUSTRY.

Mr. George Graham, Director of Masse Batteries Pty. Ltd., Sydney, paid a visit to Tasmania last month. Mr. Graham discussed with the electrical authorities, mine managements, and industrial users, the applications of Nife and Britannia Alkaline Batteries in the rapid industrial development which is taking place in that State. During his stay he visited many old friends in Hobart, Burnie, Rosebery, Queens-town, and the Tasmanian coal mining areas.

EXPANSION OF PRESIDENT CONSOLIDATED LTD.

Mr. N. A. Felton, chairman, President Consolidated Ltd., said at the recent annual meeting that his company's major expansion is to be in the field of sheet metal products, the manufacture of an extensive range of tubular steel items being planned. He also announced that refrigerator units are to-day being produced under licence in South Africa, the company receiving a royalty payment on every unit produced, with a substantial guaranteed yearly minimum over a number of years. "Production stage in another important country," he concluded, "should be reached early next year."

PROMINENT ENGINEER ON OVERSEAS TRIP.

Mr. D. H. Collins, Manager of the Civil Engineering Division of Norton, Tootill & Co. Pty. Ltd., left by B.C.P.A. on the 21st October for the United States and England on a business visit for his Company. He will attend the Public Works and Municipal Service's Exhibition being held in London during November and will observe there new plant developments.

He expects to be in England for a period of three to four months, during which time he will visit the offices and factories of numerous manufacturing companies represented by Messrs. Norton, Tootill & Co. Pty. Ltd. in Australia.

En route to England, Mr. Collins spent a limited period in the United States.

MINERS' SAFETY CAP LAMPS IN QUEENSLAND.

Mr. Gilbert Gray, Assistant Sales Manager of Masse Batteries Pty. Ltd., Sydney, the Australian representatives for Nife miners' safety cap lamps, will be visiting Queensland for two weeks from December 4th. He will visit the Southern Queensland coalfields with Mr. C. V. Sparkes, of the Lawrence & Hanson Electrical Co. (Q'ld.) Ltd., Brisbane, Nife people in Queensland. Mr. Gray will be calling on all the mines in this area and will give advice and assistance on the installation and servicing of miners' safety cap lamps and associated equipment.

Piston Rings

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DIESEL ENGINES AND ALL TYPES OF COMPRESSORS
COMPRESSION, OIL CONTROL AND DOUBLE SEAL
RINGS FROM 6 in. TO 42 in. DIAMETER

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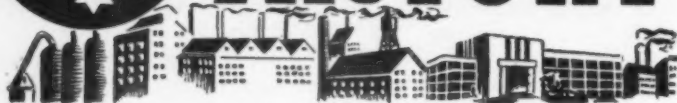
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Our editorial representative in each State makes regular calls on manufacturers, but if YOU wish to see some particular phase of your business given publicity, communicate immediately with the Editor, and he will arrange for a representative to visit.



Around & About the FACTORY



A digest of new factory and plant construction, additions, alterations and improvements, and operating news of Australian industry.

"Prolite" in Milling Production

Tool Tips that Assist Efficiency and Economy

"Prolite" tool tips, which contain hard tungsten carbide particles bonded with cobalt, being an agglomerate rather than an alloy, and which Brenco Pty. Ltd., of 113 Ballarat Road, Footscray, Victoria, and 280 Castlereagh Street, Sydney, represents throughout Australia, has made a wide appeal to all users of hard metal tools.

The firm mentioned offers a wide series of grades from which the user may select the correct quality for his particular work. For machining cast iron, non-ferrous metals, wood and non-metals and for wear-resisting parts, the "Prolite" units have particularly strong claims for efficiency and economy.

The manufacturers say "Prolite" is not steel. Even the toughest grades have a transverse rupture strength well below the normal steels. Their life between regrinds is many times that of steel tools, but they must be used carefully, especially in regard to the way in which the tools are led up to and withdrawn from the work.

It is a well-known engineering fact that the physical properties of hard metal, i.e., its hardness, strength, etc., depend upon the proportions of carbide and binder

used. This is the advantage of the powder metallurgy method of production—mixtures may be made to give properties of any value within a wide range. In the case of cutting tools or wear-resisting parts, it is obviously desirable to use the hardest possible metal, which means that with the highest proportion of carbide, but this is inevitably the grade with the minimum of strength. For this reason, "Prolite" products offer a series of grades from which the user may select his needs.

Of course, the choice of grades depends on the type of material being machined as well as the working conditions.

To assist the various industries embraced by the various tools, Brenco Pty. Ltd. has issued an attractive and exceedingly useful booklet on the subject. In addition to being basically aimed at outlining the manufacturer's units, it serves as an informative guide. It covers the uses of "Prolite" products in the machine shop, in metal manipulation, in the wood-working industries, the textile trade, and many other applications.

Brenco Pty. Ltd. has a trained staff of technical advisers ready at any time to give advice and service.

Syncarb Crucibles

Manufactured by Newbold General Refractories Ltd.

To-day metals and other substances are fused at such tremendously high temperatures that science and engineering techniques have been obliged to combine in the production of crucibles in which this operation can be performed with maximum effectiveness. Indeed, throughout the whole refractory field important advances are continually being made.

Australia is the fortunate possessor of a number of undertakings which specialise in the production of refractories. Ranking particularly high among these is the undertaking of Newbold General Refractories Ltd., which operate works in N.S.W., at War-

tah, Thirroul, Port Kembla, and Wollongong, and mines and quarries at Redhead, Lithgow, Cooma, Thirroul, Home Rule, Fugroon, Coonabarabran, Orange, Tullamore, and Grafton. Head office is at 26-30 Clarence Street, Sydney.

One of their most important lines is the Syncarb crucible. This graphite crucible is bonded entirely by carbon residues. It possesses, in consequence, a number of cost-saving and operating advantages by comparison with the conventional type of crucible. Its major advantage is the elimination of annealing before being brought into service. Among its other advantages may be cited higher refractory characteristics,

thereby making possible longer life at higher temperatures; self-glazing properties, thus preventing oxidation; and higher thermal conductivity, which spells faster melting. The use of this improved graphite carbon-bonded crucible means, in short, savings in fuel; savings on crucibles; and increases in metal pourings. For the Syncarb crucible will not spall, scarp, or crack.

The four modern Newbold works operating at four of the leading industrial centres in New South Wales, are manufacturing a wide range of products. Chief among these are refractory bricks and shapes in silica, high alumina,

kyanite, super duty alumina, silicon carbide, magnesite, chrome, and fireclay. Among other lines may be mentioned insulating bricks, shapes, and filling in various materials; high temperature cements; plastic refractory materials; Thermofrax; Newbond; Sealtite; fused alumina; silicon carbide muffles; fireclay muffles; and crucibles.

The ready availability of these superior quality refractory products has unquestionably played a vital part in the industrialisation of this country. For effective refractories are basically essential to an extremely wide section of the industrial world.

Electrical and Thermal Insulating Supplies

Manufactured and Distributed by Mica and Insulating Supplies Co. Pty. Ltd.

Mica, being a highly effective non-conductor, is unquestionably one of the most important of the materials used in the electrical industry. In view of the fact that it is a rock-forming mineral in the form of small glittering scales in granite, it is, however, limited in size.

Modern industry, nevertheless, finds many significant uses for it. And, working in close collaboration with its near relative, "Micanite", it has a host of useful applications.

During the past twenty-eight years, the enterprise of Mica and Insulating Supplies Company Pty. Ltd., 562-4 Bourke Street, Melbourne, has devoted its activities to a scientific study to the question of insulation and to the manufacture of a range of insulating products to meet virtually every need of the electrical industry.

In mica, for instance, the Misco up-to-date factory is turning out washers, elements, plates, discs, and segments. The Micanite range is more comprehensive, including as it does commutator segments; rings; channels; angles; tubes; commutator products; "Micanofolium"; tapes—silk, paper, and cloth; the Micanite itself coming forward in moulding, flexible, commutator, and heat-

resisting grades. The full range of products handled by this firm comprises asbestos; casein; ceramics; cements; compounds; felt; fibre; gaskets; glues; insulators; packings; porcelain; Presspahn; resins; rubber; shellac; sleeveings; slot insulations; varnishes; and washers.

As the Misco organisation specialises in the manufacture and distribution of all types of electrical and thermal insulation and engineering supplies, it is in an excellent position to proffer expert advice and render valuable assistance to manufacturers in the solution of their insulation problems. A wide range of stock in various qualities, sizes, and grades is available, moreover, throughout the Commonwealth, these stocks being available at the under-mentioned locations: Victoria: 562-4 Bourke Street, Melbourne; New South Wales: 168 Clarence Street, Sydney; Queensland: Misco House, 134 Albert Street, Brisbane; South Australia: 70-72 Flinders Street, Adelaide; Tasmania: 147 Liverpool Street, Hobart; and Western Australia: 856 Hay Street, Perth, and cnr. Brooking and Cassidy Streets, Kalgoorlie.

The Misco organisation also acts as the intermediate agents for the products of the Ormiston Rubber Co. Pty. Ltd., Melbourne.

Precisely speaking!

**IN THE MATTER OF INDICATION
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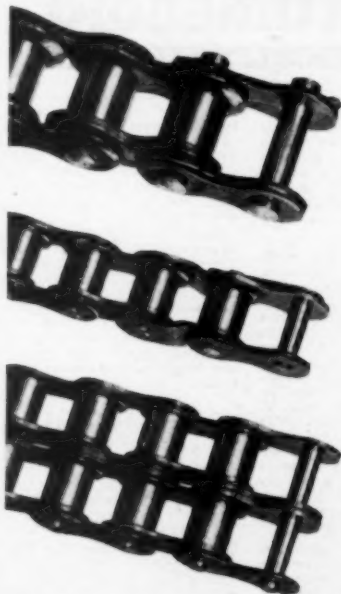
Your process depends upon these three factors and your instruments must always "Speak precisely." An inaccurate indication can be a costly business, causing loss of production, quality and efficiency. Make sure of your process by being sure of your instruments. Have them checked periodically at any of the following addresses:

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FIGURE NO 59

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AUSTRALIA

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TRADE MARK

ILLUSTRATED above is one of the large range of JOHN Valves and Fittings for use with STEAM, WATER, OIL, CHEMICAL, AIR and GAS Services of high, medium or low pressures and temperatures.

FULL PARTICULARS supplied on request

Beauty in Manicure Sets

Sterling Steel Products Company's Wide Range

"Beauty at your fingertips" is the excellent slogan of Sterling Steel Products Pty. Ltd., of 34 Hutchinson Street, Surry Hills, Sydney. The firm manufactures a remarkable variety of manicure sets and each year its designers turn out a number of new and equally attractive styles.

Sterling Steel Products has had wide experience in making these dainty gifts, which readily find customers all over the Commonwealth and in New Zealand.

Its designers claim they can produce a set suitable for all occasions, for young or old, whether travelling or at home—in fact, a set to suit almost any individual personality. A visit to the Hutchinson Street factory brings ample substantiation for this claim. The large and ever-increasing range includes sets for the sporting girl and the teenager, as well as elegant sets for the debutante and the woman whose taste is more mature. That for

the sporting girl is a compact little case, made in the popular book type and covered with smart grained leather. It contains six nickel-plated manicure units of first-class quality. For the school-girl there is a neat leatherette case, also in the book style, with the five essential manicure components for her needs. But for my lady there is a remarkably beautiful range to browse over. It would be impossible to describe this fully within the scope of this article, but mention of some of the features of a few of the more popular designs may give some idea of the variety. There are wallet styles, travelling sets, moon, oval, round and square shapes; dressing-table stand types; and wallet styles for men.

Sterling manicure components are designed with every care for detail, and manufactured for strength and durability. They are plated with a bright, non-corrosive udyllite nickel. Gold compon-

ents are heavily plated with pure gold and further lacquered with a protective agent which prevents the gold from tarnishing. Facet-cut handles are screwed to the components instead of being glued, so that the buyer is sure of lasting quality.

All the leather cases are made from first-quality hides in roan, calf, Morocco and English pigskin. Excepting the English pigskin, all leathers are offered in a wide colour range—red, brown, blue, tan, fawn and green. Each case is luxuriously lined with quality white waterwave moiré silk. Plastic cases are scientifically designed and sturdily built, of fabricated moulded perspex. The "Celebration" set cases are carefully and strongly made and finished with a specially chosen decorative covering of a dainty feminine pattern. The lids are silk-lined, and the units rest on a velvet-lined recessed platform.

Among the many attractive scissors sets are several new designs. The firm are making a speciality of flower scissors, chromium-plated and fitted with stainless steel blades—so designed

that thorn pricks or stains on the hands are no longer a problem. Animal claw trimmers are another new design. They are of hardened and tempered high carbon steel, with a gleaming, non-corrosive finish.

This Company has also been manufacturing manicure nail files, tweezers, medical forceps, nail clippers, shoe horns, shoe trees, boot, butcher and bush knives, and many other items too numerous to mention for quite a number of years, and the name "Sterling" is known throughout the length and breadth of Australia.

Safety Behind this "Iron Curtain"

Brady's Wonderful Record of Service

The modern idea for entrance coverings, for warehouses, dock and railway sheds, factories and garages, is the "steel curtain"—or roller shutter. It provides speedy and efficient protection.



IF IT'S OUT IN THE WEATHER - better use BITUMENOID PAINT

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ROOFS

GARDEN FURNITURE

WROUGHT IRON

Bitumenoid Paint brushes on like ordinary lead-based paint, but it won't crack or peel off. It's cheaper, too. Use it on any surface—wood, metal, concrete or "Bitumenoid" roofing. It even sticks on rusty iron.

Bitumenoid Paint is the proper paint to use on roofs, tanks, wrought iron, garden furniture, gates, etc.

You can get Bitumenoid Paint at your local store in gallons, halves, quarts and pints, and in black, red, green or silver.

But be careful, don't accept inferior substitutes.

If your local store is out of Genuine Bitumenoid, write to Bitumenoid Roofing Pty. Ltd., 187 Redfern St., Redfern, N.S.W., giving us the name and address of the store. We will get it to them for you, as much as you need, and without delay.

Genuine Bitumenoid
PAINTS AND PORTOSEAL

LADDERS, STEPS and TRESTLES

of Every Description.
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Richard Brady and Sons Pty. Ltd. designs and constructs all kinds of roller shutters with precision fittings, to withstand years of usage. The firm also makes wooden shutters, roller grilles and fireproof doors. It turns out an amazing variety, from cabinet size to 25-ft. jobs as a matter of routine. Its biggest shutter was for a warehouse. This giant was 28 ft. long by 12 ft. high. These big jobs are constructed of 17-gauge three-inch interlocking slats. The standard shutter is 21-gauge, with two-inch interlocking lathes. Light jobs, for panel vans, etc., are 26-gauge, with one-inch slats.

Brady's has just completed a big contract for the Western Australian Government's workshops. The firm's products are to be seen all over Australia. In Sydney, most of the shutters in the City Market and on the wharves were erected by Brady's. Its wooden shutters are seen on countless shop windows, while the rolling grilles, made of ring-shaped pieces of duralumin, are features of many canteens and bars. Many shops are now using these rolling grilles, for they allow for display as well as giving protection.

Brady's has a wonderful record of service. It has been on the same site—20 Bridge Road, Glebe, N.S.W.—for 67 years, although the factory has of course been enlarged in the course of the years. In the company safe are the copies of the correspondence—in the neat handwriting of the period—of the founder's first contracts. The earliest traceable record was June, 1883, when old Mr. Brady had an order from Goulburn, in N.S.W.

But Brady's is not only proud of its history. It is proud, too, that it has kept abreast of the times and, in fact, ahead of developments in its own line.

CLYDE INDUSTRIES LTD. INITIATE DIESEL LOCOMO- TIVE PRODUCTION PLAN.

Mr. R. E. Purves, chairman of directors of Clyde Industries Ltd., Granville, N.S.W., announced at the annual meeting that the recent dollar loan had made possible his company's launching of its plan to manufacture Diesel electric locomotives in association

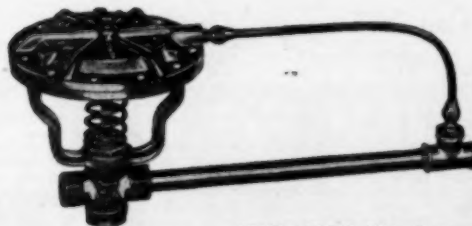
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Provides

AUTOMATIC PROTECTION FOR HOT WATER SERVICES!

THE MODERN WAY TO
SIMPLIFY HOT WATER
SERVICE INSTALLATION

The Wilcolator 780-C/in. water pressure reducing valve banishes old-fashioned overhead cold water feed tank.



Wilcolator 780-C/in. Water Pressure Reducing Valve.

- Specially designed to control varying main pressure to the steady reduced pressure required for domestic hot water services.
- Easily installed in existing homes—saves costly ceiling installation of cold water feed tank, with attendant structural alterations.
- Approved by water supply authorities in Brisbane, Sydney, Melbourne and Hobart.

OTHER PRODUCTS MANUFACTURED BY WILCOLATOR:

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"ACE" Steam Control Equipment

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Wilcolator Sales and Service —

BRISBANE: C. F. Willers, Ryan House, 34 Eagle Street; Instrument Engineering Co., 32 Annerley Road, South Brisbane. SYDNEY: A. E. Ackland Pty. Ltd., 189 Clarence Street; Instrument Service Co., 3 Burton Street, Glade. MELBOURNE: A. E. Ackland Pty. Ltd., 446 Peel Office Place; Wilcolator Manufacturing Pty. Ltd. ADELAIDE: C. H. Muller, Woranda Buildings, Grenfell Street; Unbehaun & Johnstone Ltd., 58 Gawler Place. PERTH: Atlas West Aust. Ltd., 894 Hay Street.

with the Electro-Motive Division of General Motors Corporation, U.S.A. "At first," he said, "Clyde will need to import a considerable portion of components for the Diesel locomotives from the United States. It plans progressively to increase local manufacture as economic conditions will allow. The company holds orders for these locomotives from the Commonwealth and Victorian Railways and others are pending. The directors, moreover, expect substantial inquiries from overseas railway systems about the locomotives."

Vitreous Porcelain Enamelling

Completely Modern Continuous Furnace with Capacity
Available for Sheet Metal Enamelling

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Cast-in Tungsten Carbide Inserts

There has been developed a new method—the subject of a patent application—for “casting-in” tungsten carbide which presents a number of advantages from the point of view of cost and variety of parts which can be produced.

The substantial savings both in the cost of replacement parts and machine maintenance which result from the use of tungsten carbide for wear-resisting surfaces have led to its wide application,

method, and it is claimed that by the process which has been developed, inserts can be cast-in very accurately for position and in locations where they could not be secured by other methods. Thus components for which it was previously necessary to use hardened steel can now be provided with wear-resisting inserts, and, in addition, can be made from materials more suitable for other reasons.



Examples of textile machine parts with tungsten carbide inserts cast-in by a new process.

but difficulty arises in many instances because it is not possible to fasten tungsten carbide in the required positions by conventional means. Eyelets, bushes, and strips of tungsten carbide can readily be secured by brazing, or the use of shrunk fits, to suitable components, but other parts may be too fragile or complicated to permit use of these methods. In addition, instances arise where the cost is excessive because of the large amount of intricate machining subsequently required to complete the parts.

It was primarily to overcome these difficulties that attention was directed to the casting

In the casting process, it is stated, the tungsten carbide insert is treated in such a way that it becomes completely united or “brazed” to the parent metal, so that the resultant part is capable of withstanding shocks without risk of loosening the insert. In addition, all inserts are designed to ensure the maximum of mechanical interlocking with the surrounding metal. The method has consequently been successfully extended to the economical production of various types of tipped cutters and to parts of relatively large size required to withstand heavy duty.

The accompanying illustration shows a selection of parts used in the textile industry which have been produced by the casting process at considerably lower cost than would be involved by other methods. All these parts are phosphor-bronze castings, that at

A, which incorporates eight tungsten carbide inserts, being hinged to a similar component to form a tension gate.

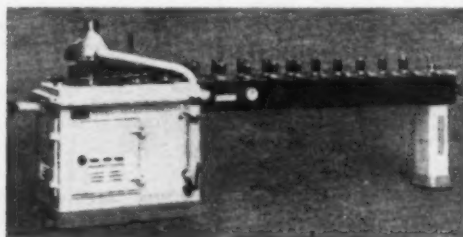
It is understood that, if required, the tungsten carbide inserts can also be incorporated in steel and iron castings. [2634].

Filler for Free Flowing Foodstuffs

A new patent automatic continuous filling machine for soups, jams, jellies, marmalades, and similar free-flowing food products, is being manufactured in two sizes, one for filling 2 lb. and 1 lb. jars or cans at the rate of 30 to 60 containers per minute, and the

and minimum filling capacity of the machine.

In order to obviate the trouble of crystallisation of the product on cylinder walls which occurs in models employing pistons or plungers, all reciprocating movements in these new machines have been



Automatic continuous filling machine for such products as jams, jellies, marmalades, and soups.

other for filling 7 lb. jars or cans at a speed of 20 containers per minute or 14 lb. containers at 10 per minute.

The filler for 2 lb. and 1 lb. jars or cans is provided with 31 patent roller bearing carriers, but 19 or 25 carrier machines are available. This model permits skimming and tissing to be performed on the delivery side without removing the filled containers. Micro-regulation of the fill is provided, the controller of which operates a quick-change gear whereby the filling range of the pump is infinitely variable between the maximum

dispensed with in favour of the rotary continuous streamlined flow, which provides a steady continuous supply of the product handed, without pulsation, churning or aerating, to the revolving nozzle head. Silent in operation, the machines fill cleanly and regularly without splashing or dripping jam on the outside of the containers, and whole soft fruit jams are filled without crushing the berries.

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work of the machine, the product being measured and pumped to the nozzle head through a metal

telescopic feed pipe, and automatic electrical interlocks prevent spillage and overfilling. [2840].

Compact Set for Precious Metal Testing

We illustrate a metals testing set, which has recently been introduced into Australia.

This interesting British production is a small, neat wooden case containing four bottles of various special reagents and test papers. An ingenious revolving chart, made of light metal, is included with each set, and as the colour reactions are obtained by application of the reagents to the metals under test, the corresponding colours are found on the chart, and the metal positively identified.

Primarily, the set has been designed for any trades where precious metals are in use. Careful operation of the set will identify the various carats of the yellow and the white golds, will distinguish white gold from platinum or palladium, and give a definite reaction on stainless steels. Base metals are quickly revealed, and the different standards of silver may be tested.

The four bottles in the set are made of differently coloured glass, so that there is no need for labelling, and as they are emptied, refills are available (also spare packets of testing papers).

It is said that a set contains sufficient of everything to last for several years in normal usage.

The test set is not a toy, nor is it a simple novelty. It is a scientific instrument and as such, must be used with care and skill to obtain proper results.



The new metals testing set.

It does not pretend to make a chemical analysis or assay, but in experienced hands, it is a valuable guide in its particular field, and its compactness will appeal to those trades which have waited for just such a unit for many years. [2841].

Riveting Machine with Spinning Head

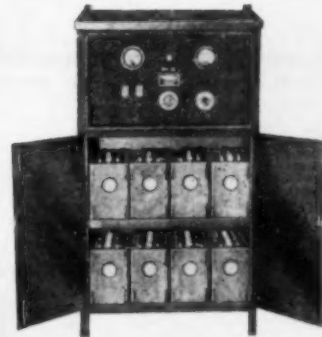
A new high-speed riveting machine with spinning head recently developed has an adjustable stroke from zero to 1/2 in., and is driven by a push-button-controlled 1-h.p. motor mounted on a hinged plate on the column at the rear. Alternatively, it can be supplied with single-pulley drive. When the motor is running, the riveting spindle is set in operation by a foot pedal, which engages a plate-type friction clutch on the main shaft, this being mounted

alternatively, it can be supplied with single-pulley drive. When the motor is running, the riveting spindle is set in operation by a foot pedal, which engages a plate-type friction clutch on the main shaft, this being mounted

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in totally-enclosed ball bearings. The hammer only operates while the pedal is depressed. The machine will close up to 22 rivets per minute, all sizes being dealt with at the same speed.

The hammer spindle, which is of heat-treated alloy steel, is rotated by a mild-steel worm and bronze worm wheel. The length of stroke is determined by a double adjustable bronze-bushed steel eccentric on the main shaft at the back of the machine, and numbered stops are provided to facilitate setting between zero and $\frac{1}{8}$ in. This adjustment is important when closing long rivets, or rivets in soft metals, the optimum position of the eccentric for any particular job being obtained after a few trials. The arrangement ensures that the rivet is not

bent inside the material to be riveted. Only the head is spun out, and the size can be accurately controlled.

The stroke of the eccentric is transmitted to the hammer spindle by a leaf spring of tempered steel or beryllium copper, and excessive shock is prevented by rubber buffers. The distance from the column to the spindle is 7 in., and the anvil table, which has a top surface of 6 by 6 in., has 6 in. of vertical adjustment by handwheel and screw on the front face of the column. The anvil tip is of heat-treated alloy steel.

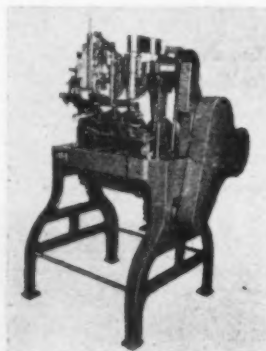
The floor space required by the machine is 3 by 2 ft., the overall height is 4 ft. 2 in., and the approximate weight, 5 cwt. [2596]

Brush Maker is Versatile

Three important advantages are claimed for the automatic brush

shapes from flat to wide flare; and operates automatically in drilling, filling, and stapling at rates ranging from 200 to 340 holes and tufts per minute. Precision is provided by a patented hole-finder guide which automatically and accurately locates holes drilled in the first station and holes to be filled and stapled in the second station.

The hole-finder set-ups are either a flat table mechanism for flat-type brushes where holes are positioned all in the same horizontal plane, or a gear-rack device for brushes that have a wide flare or a circular cross section. Another model is built with a dual-material magazine. [2630].



A wide variety of brushes can be produced on this machine.

making machine, illustrated. The unit can be used in the manufacture of a wide variety of brushes ranging from small tooth brushes to large plater brushes; is applicable to many different brush

AUSTRALIAN-BRITISH ENGINEERING ASSOCIATION.

Mr. G. Watson, chairman, Commonwealth Engineering Co. Ltd., announced recently that because of the increasing difficulty in securing adequate supplies of labour and local materials, an association has been formed by his company with Pressed Steel Company, England. He added that steel components are being sent out for assembly to Australia.

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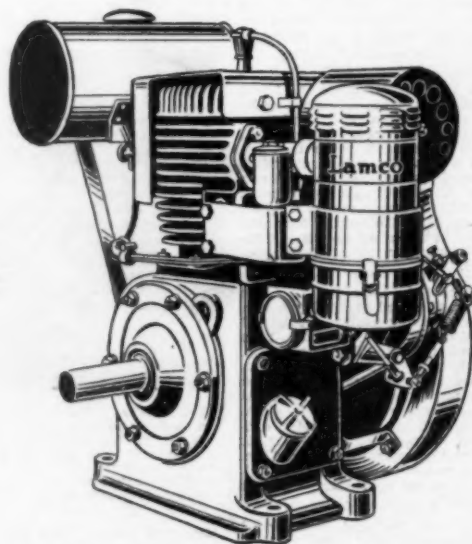
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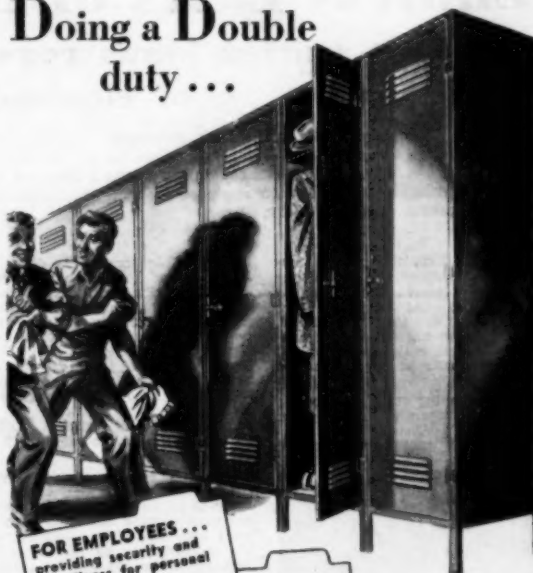
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Endless Belts of Ethyl Cellulose Film

Making scarfed joints requires special machines capable of close-tolerance work

The newer Dictaphone models, instead of using wax cylinders, use a record made in the form of an endless belt of ethyl cellulose film. This new recording medium has the advantage that it is flexible, non-fragile, and very light and compact.

The ethyl cellulose film averages between 0.0055 and 0.0065 in. in thickness. Each belt is $3\frac{1}{2}$ in. wide and measures 12 in. in circumference. The film employed for belt manufacture is purchased in rolls 13 in. wide, but the belts are made on a special machine described below.

THE film handled by this machine is converted into a tube having a scarfed and lapped longitudinal joint or seam (See Fig. 3). As the tube is produced, 31-in. lengths are cut off automatically, and it is these lengths that form the belts ready for use in recording.

In developing this fabricating method, automatic means for

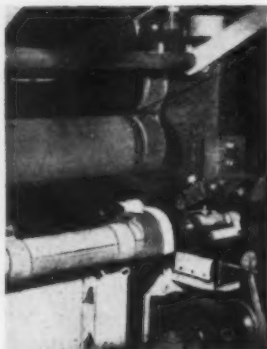


Fig. 1. Scarfing unit. At right is one milling cutter. Reels at top wind ribbons cut from edge.

making a scarfed joint were perfected, and the joint, besides meeting strength requirements, is held to a thickness that does not exceed that of the film by more than 0.012 inch. The belt circumference at one edge does not differ from that at the other by more than 0.010 inch. These are close limits in working with plastic film on a production scale but are held in the set-up devised for the purpose.

All belts are marked with an arrow pointing to one edge. This arrow indicates the edge that goes in first when the belt is applied to recording and transcribing machines. Placing the belt in this manner makes the sapphires that produce and transcribe the recording ride down over the lip of the joint; hence the sapphire never can catch under the lip and give trouble.

MILLING CUTTERS USED.

The lap joint makes it necessary to scarf the edges to be

lapped. This scarfing is done in one unit of the machine developed especially for belt manufacture. A part of this unit is shown in Fig. 1. Scarfing is done by two formed milling cutters of high-speed steel about 1 in. in diameter that are belt driven at about 5,700 r.p.m. or a surface speed of 1,860 ft. per minute. Depth of cut is adjusted by a micrometer, the cutter being locked at the correct depth when correctly set.

There is one cutter for each edge of the plastic film, which is received in rolls 13 in. wide. Cuts are made as the film passes over steel rolls in being unwound at the desired rate by drive rolls whose speed is adjusted by a variable speed transmission driven by a constant-speed motor. Cutters are precisely spaced so as to make the scarfing cuts at a fixed distance apart. This setting largely controls the circumferential length of the belts produced.

Since the scarfing cuts go only half way through the film and are not made at the extreme edge of the film, says Herbert Chase in an article in "Modern Plastics", it is necessary to cut off the film at the outside edge of each scarf. These cuts are made by fixed circular knives that are precisely set to sever a narrow ribbon from each edge of the film. The ribbons produced are rolled off on reels and constitute scrap.

After being scarfed, the film feeds over overhead rolls and down through a floating take-up device, Fig. 4, that is a part of the second unit of the machine. The take-up compensates for any slight difference in speed as between the driving rolls of

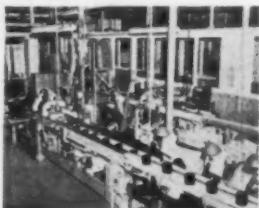


Fig. 2. Tube making machine is in left background. A conveyor carries finished ethyl cellulose record belts past inspection stations in right foreground.

the first unit and those that draw the film forward and feed it through the tube-forming and joint-cementing unit. After passing the take-up, the film is pulled through a ring, left in Fig. 5, that shapes it into tubular form and brings the two scarfed edges together so that they lap precisely.

CEMENTING.

As the lap is made, a liquid cement consisting of ethyl cellulose and a solvent is applied from a hypodermic needle. This liquid is fed by a small pump that applies a constant pressure and is adjusted to provide a uniform flow. This is important because insufficient cement makes a joint lacking desired strength; too much results in smearing that is responsible for rejection of belts produced.

Immediately after the liquid is applied, the tube passes between a set of expanding internal rolls and a mating set of external rolls pressed inwardly. These rolls, Fig. 5, grip the walls of the tube formed and advance it over a fixed mandrel. External rolls at the top, where the joint is made, are heated to a precisely controlled temperature of 140 deg. F. to dry the cement in a fixed interval and effect a strong and uniform joint of substantial constant thickness.

The tube produced is advanced continuously over the mandrel until, near its end, a knife moving circumferentially cuts off 31-in. lengths. At the same time, a

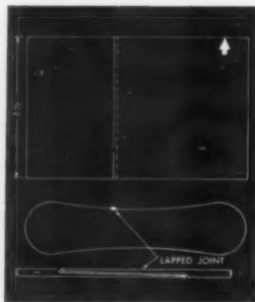


Fig. 3. Lower drawing of lapped joint in ethyl cellulose belt, is exaggerated to illustrate detail.

small inked marker prints an arrow at one edge of the belt. As the tube is advancing continuously, both the knife and the marker have to be advanced longitudinally at the same rate as the tube. This is done by pneumatic means in a precisely timed rela-

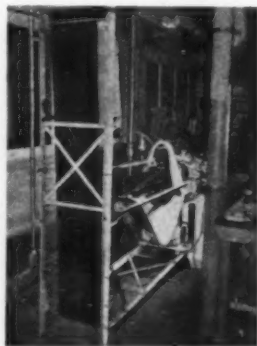


Fig. 4. Film with scarfed edges feeds down through floating take-up roll on the end of a hinged frame near the floor—and then over another roll into tube-making machine in the background.

tion; the instant that the knife and marker have completed their functions they are automatically withdrawn and retracted longitudinally to start a new cycle. In

(Turn to page 30.)

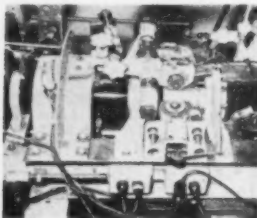


Fig. 5. In tube-forming unit, film is pulled through the ring at left and becomes a tube that is moved by inner and outer rolls, centre. Cement is applied to scarfed joint by a hypodermic tube not shown here.

New Bonding Process

Union of Aluminium with Steel and Cast Iron

The advantages which would result from the chemical bonding of aluminium and its alloys to ferrous metals have been recognized for many years, but the fact that the metal readily oxidises, resulting in a layer of non-metallic material being formed at the interface, presented a problem which was not overcome until recently with the introduction of a patented process.

One of the most important advantages of the process is that it permits full advantage to be taken of the combination of high strength and resistance to abrasion provided by alloy steels with low density and high thermal and electrical conductivity which are characteristic of aluminium and its alloys.

THE required bond is obtained by what is essentially a casting process. The ferrous part, suitably cleaned, is immersed in a bath of molten aluminium and upon attaining the temperature of the bath is attacked by the molten aluminium, an aluminium-rich alloy being formed at the interface. After being thus "tinned" with the aluminium alloy, the part is removed from the bath, placed in a mould, and the aluminium casting alloy poured about it so that the cast metal fuses with the still molten coating. Upon cooling, the work is re-

perature at which the part can be used in service may be limited because of undue stresses occurring at the bond line as a result of the difference in thermal expansions. Conversely, if the aluminium casting alloy is poured in such a manner that the bond is on the inner diameter of the ferrous piece, sufficient restraint must be imposed by the cores to offset the stresses which occur during cooling. Because of the relatively low ductility of the bond, designs which would tend to stress the bond in impact are not practicable.

USE OF THE PROCESS FOR HEAT EXCHANGERS.

In a paper, read before the Society of Automotive Engineers in New York, by C. E. Stevens, Jr., and reported in "Machinery", it was stated that one of the first applications of the process was to bi-metallic cylinder barrels for aircraft engines. The method, by eliminating the thermal resistance at the joint between liner and fins, present when shrinking or other mechanical methods are employed, permits full advantage to be taken of the high thermal conductivity of aluminium alloys, and at the same time provides for a lighter construction than the all-steel barrel. The heat dissipation is stated to be increased by more than 50 per cent, as compared with the all-steel barrel, while the weight of the assembly can be reduced by 25 per cent.

Another important application is to finned bi-metallic brake drums, which are being increasingly employed, especially in the U.S.A.,

for heavy transport and passenger road vehicles. Whereas conventional brake drums may reach a temperature of 750 deg. F. with consequent loss of braking power, bi-metallic drums are found to reach a temperature of only 500 deg. F. under similar conditions. It is, of course, necessary that the heat generated be dissipated from the drums by direct air stream or other means in order to obtain the full advantages. The bi-metallic construction is also stated practically to eliminate development of the network of minute cracks, known as checking or crazing, common on the inner surfaces of cast-iron brake drums, and which may lead to complete failure of the drum should a crack extend. A heavy duty bi-metal brake drum for a commercial vehicle is shown in Fig. 1.

BONDING FERROUS INSERTS.

For the production of aluminium alloy parts requiring ferrous inserts to form wear-resisting surfaces or to give additional strength at particular points, the bonding process is found to be particularly advantageous as compared with previous methods employing cast-in inserts with locking grooves, or a built-up construction. The latter methods are more expensive and if the parts are subjected to high and fluctuating temperatures the resulting thermal stresses often cause loosening of an insert.

This is avoided in suitably-designed, bonded, bi-metallic parts as is evidenced by the large number of light alloy pistons which are now in service fitted with bonded ferrous inserts to

carry the upper rings, as shown in Fig. 2. The rate of wear of the upper ring grooves, particularly in diesel engine pistons, tends to be relatively great, and it is claimed that bi-metallic pistons have a life two to three times that of all-aluminium pistons. Thus the advantages of a light-weight piston with high thermal conductivity, combined with the

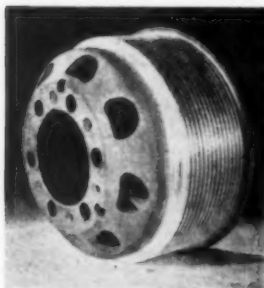


Fig. 1. Bi-metal bonded brake drum for commercial vehicle.

moved from the mould and machined as required.

The bond metal at the joint has a very high compressive strength, for example, an aluminium-coated steel strip has been prepared and subjected to rolling with reductions up to 75 per cent, yet the bond thickness has remained the same, and micro-hardness tests have shown a bond hardness of 70 to 80 Rockwell C. The tensile strength of the bond ranges from 10,000 to 17,000 lb. per sq. in., and the shear strength from 6,000 to 8,000 lb. per sq. in. The properties of the materials after bonding are stated to be in no way impaired, and, in fact, are sometimes improved.

The coefficient of expansion of most aluminium casting alloys is approximately twice that of the majority of ferrous alloys, and account must be taken of this fact when designing bi-metallic parts. If a considerable body of aluminium alloy is cast round a strong steel insert, then the tem-

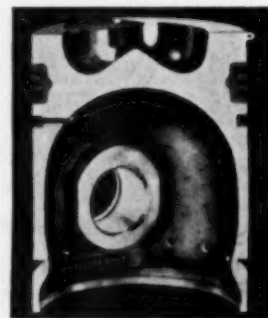


Fig. 2. Sectional view of a light alloy piston with bonded ferrous wear insert for the top rings.

wear resistance of ferrous materials, are obtained.

In making these bi-metallic pistons, to permit the casting to cool to room temperature without bond failure, a nickel cast-iron which has a high coefficient of expansion, or alternatively a grey iron of low modulus, is used, so that the difference between the contraction of the two metals from casting temperature does not cause stresses in excess of the bond strength.

Aluminium alloy engine timing gears with bonded steel hubs have also been employed with success, their strength being comparable with that of cast-iron gears. The noise level in operation compares favourably with that of fibre gears, while the life is three times as great. If reduction in weight is desired, bonded bi-metallic housings can be economically employed instead of cast iron, where heavily-loaded bearings necessitate the provision of race housings of ferrous material. Alternatively, the method permits a reduction in cost as compared with conventional built-up designs.

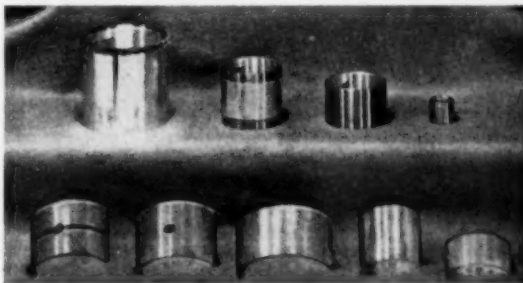


Fig. 3. Selection of bonded, steel-backed aluminium-alloy bearings.



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Another important field of development is steel-backed aluminium bearings. Certain of the aluminium-tin alloys have particularly good bearing qualities, and, under conditions where loads are not too great, solid bearings of this type are very successful. As the loads increase, however, it is necessary to add hardeners, such as copper, to the alloys, which to some extent reduce their effectiveness as bearing materials, and if the duty becomes still more severe, the very property of conformability which makes aluminium suitable for this application, may lead to failure.

In the steel-backed bearing, only 0.010 to 0.015 in. of aluminium alloy is bonded to the steel shell, which provides support against the load. It is thus unnecessary to use hardeners in the alloy, which can be selected to give the most desirable bearing properties. Some hundreds of bearings are stated to be undergoing test, and development work is in progress to determine rapid and economical means for their production. A selection of these bearings is shown in Fig. 3.

Endless Belts of Ethyl Cellulose Film

(Continued from page 28.)

other words, a flying cut-off and printing marker are required.

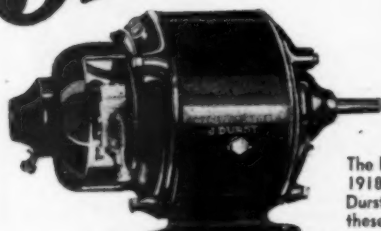
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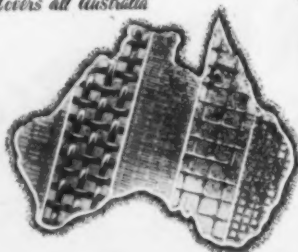
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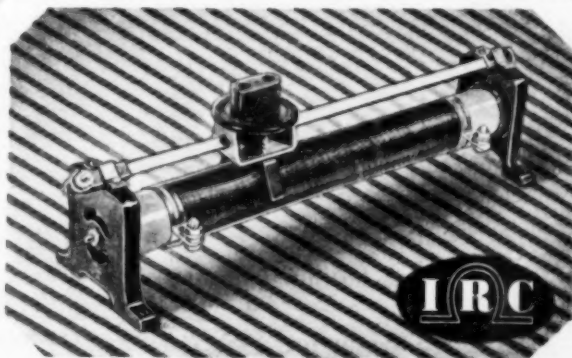
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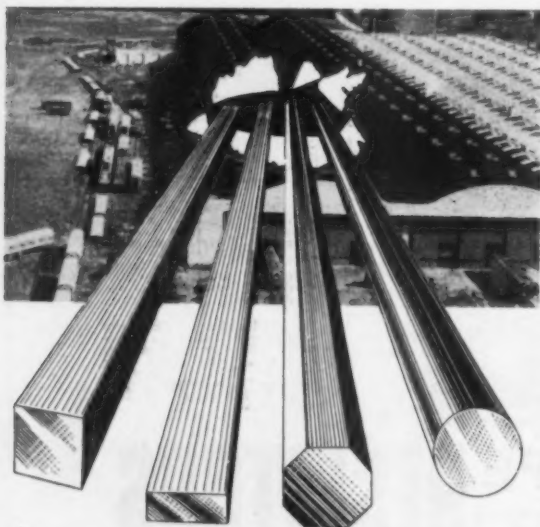
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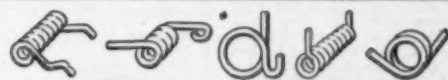
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Details and Prices on application to Purchasing Officer, Stores Branch, St. Andrew's Place, Sydney (Telephone B 0250, Extension 213).

Queen Victoria Bldg.,
Sydney. 3/11/50.

C. J. CRAGGS,
General Manager.

WANTED HEAVY DUTY CROPPING SHEARS

Suitable for cutting scrap steel for use in foundry cupola.
Ref.: "SHEARS," c/o "The Australasian Manufacturer," Box 1667, G.P.O., Sydney.

Capacity Available
Capstan Work to 1 1/2 in.
CHARLES M. TERRY PTY. LTD.
Works: Amelia Street, Waterloo
Phone: BW 8128

FACTORY SPACE WANTED

To purchase or rent, 30,000ft. with, if possible, room to expand to 100,000ft.
Reply to BOX 4491, G.P.O., Sydney, N.S.W.

DERBY & CO. (AUST.) PTY. LTD.

ORES AND CONCENTRATES
METALS AND MINERALS
FOR INDUSTRY

EDMENTS BUILDING
RUNDLE STREET
ADELAIDE, STH. AUST.

'Grams and Cables:
"FLASHON"
Adelaide

'Phone: W 1481

AMERICAN FIRE-PROOF PAINT

Overseas firm desires to make arrangements with an Australian firm to manufacture their product under licence. Interested firms, please contact:

"FIREPROOF," Box 1890, G.P.O., Melbourne

BESSEMER CONVERTER WANTED: New Zealand firm wants to purchase a new or used Bessemer Converter having an input of approximately 30 tons a day. If interested, write to Ref. 8308, c/o "The Australasian Manufacturer."

MILD STEEL STUDS: Melbourne firm has for sale approximately 90,000 1 in. dia. Mild Steel Studs, 6 1/2 in. long threaded, 1 in. Whit. one end only, for length of 1 in. Apply Ref. 8307, c/o "The Australasian Manufacturer."

ELECTRIC HOIST WANTED: Inquirer wishes to obtain an Electric Hoist, 2 cwt.-4 cwt. capacity. Write Ref. 8305, c/o "The Australasian Manufacturer."

PLASTIC MOULDS: N.Z. Company wishes to contact Australian engineering establishment capable of producing plastic moulds, particularly for the production of domestic radio receiver cabinets. Write to Ref. 8310, c/o "The Australasian Manufacturer."

PRESSED STEEL WHEELS: Sydney firm has for sale, approximately 40,000 1 in. pressed steel wheels, suitable for toys. For samples, price, etc., write to Ref. 8295, c/o "The Australasian Manufacturer."

"KRAUSE" PRESS FOR SALE

100-ton "Krause" Press, 3 in. stroke, 1 1/2 R.P.M. Complete with 8 H.P. Motor, Vee Belts and Starter Switch. £950.

P.O. BOX 40, KOGARAH, N.S.W.

**PRESS
CAPACITY
AVAILABLE**
HERCULES STEEL PRODUCTS
(AUST.) LTD.
PORT KEMBLA, N.S.W.

CRUDE RUBBER SCRAP: Sydney firm wants to purchase in any quantity, large or small, supplies of Crude Rubber Scrap. Write to Ref. 8298, c/o "The Australasian Manufacturer."

CO. APPARATUS FOR SALE: Siemens-Elliott Electrical CO. apparatus, complete with Filter, Aspirator, Cooler, Transmitter, Rectifier and Elliott CO. Indicator with a 5 in. scale graduated 0-20% CO₂. The apparatus is in almost new condition and ready for use on boilers or furnaces. Write Ref. No. 8304, c/o "The Australasian Manufacturer."

VICTORIAN REPRESENTATIVE WANTED: N.S.W. manufacturer of well-known brand of Small Tools, wishes to appoint Victorian Representative. Write to Ref. 8303, c/o "The Australasian Manufacturer."

(Turn to page 39.)

"A New Service" HIGH QUALITY CASTINGS in ALUMINIUM ALLOY

To Any
Specification

CASTALLOY PTY. LTD.

493 Albion Street
West Brunswick, Vic.

Specialists in

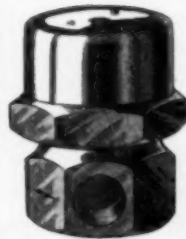
Aluminium Alloys

Gravity Die-casting of all
Any Quantity or Size

Prompt Service and Delivery

Telephone: FW 6277

STEAM TRAPS



LATEST DEVELOPMENTS

- Traps manufactured completely from Bar Stock, effecting **LOWEST** cost.
- Complete replacement of the **ONLY** moving part and seat at minimum cost without removal from line.
- Widest operating range (2-250 lb. sq. in.) without adjustment.
- Highest condensate capacity over range.

LITERATURE ON REQUEST

TOROID INDUSTRIAL SUPPLIES Pty. Ltd.

528-530 Collins St., Melbourne, Aust.

'Phone: MB 2374 and MB 2375

INTERSTATE DISTRIBUTING AGENTS:
SYDNEY: Toroid Industrial Supplies (N.S.W.)
Pty. Ltd., MX 2548. BRISBANE: W. E. Peter-
man & Son, 'phones B 2088-9. PERTH:
McLean Bros. & Riggs Ltd. LAUNCESTON:
Douglas & Fraser.



NEW TYPE DIE SETS NOW AVAILABLE

Symbol	Right to Left	Front to Back	Shank Dia.
81R — 471 1/2	4ins.	7ins.	1 1/2ins.
— 472	4ins.	7ins.	2ins.
— 581 1/2	8ins.	8ins.	1 1/2ins.
— 582	8ins.	8ins.	2ins.
— 7102	7ins.	10ins.	2ins.

JOHN HEINE & SON PTY. LTD.

Allen Street, Leichhardt, Sydney, N.S.W. 'Phone: LM 1444.

Representatives:

In Melbourne, Adelaide and Perth — McPherson's Ltd.
In Brisbane — Engineering Supply Co. of Aust. Ltd.
In New Zealand — John Chambers & Son Ltd.

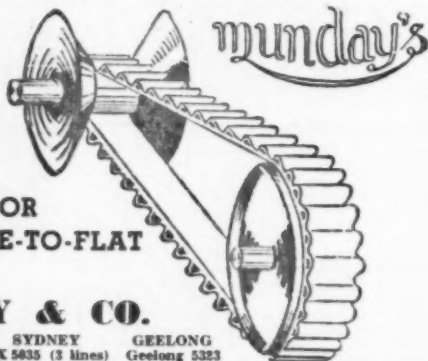
MUNDAY'S

FOR
VARIABLE
SPEED DRIVES
"RIPPLE"

LEATHER BELTS FOR
VEE-TO-VEE & VEE-TO-FLAT
ARRANGEMENTS.

JAS. MUNDAY & CO.

MELBOURNE SYDNEY GEELONG
Phones: MU 6015 (4 lines) BX 5835 (3 lines) Geelong 5323



SERVICE

FOR DECORATING & BRANDING



THE FAMOUS SELEX DECALS ARE UNEQUALLED FOR BRILLIANT COLOUR AND
DURABILITY ON WOOD, METAL, PLASTICS, RUBBER, LEATHER AND GLASS

SELEX DECAL PTY. LTD.

OFFICES IN ALL AUSTRALIAN CAPITAL CITIES

Technical Associates: Canada Decalcomania Co. Toronto and The Meyercood Co. Chicago

"ROBLAN" INDUSTRIAL STOOLS



**STURDY
PRESSED STEEL
CONSTRUCTION
PROMPT DELIVERIES**

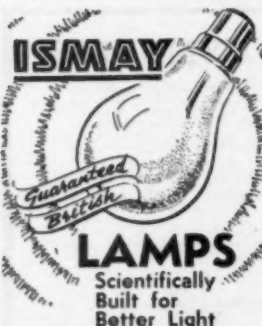
Manufactured and Distributed
by

Robertson & Lansley Pty. Ltd.
MOORE AND WHITE STS.
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Telephone: LM 1617

Industrial Minerals and Siliceous Abrasives

Laboratory Standardised,
Ground and Processed to
Specification by

**Austral Rock Milling
Pty. Ltd.**
GLADSTONE STREET
NEWTOWN, N.S.W.
Phone: LA 2562



STEWART J. MATHEWS PTY. LTD.
217 William St., Melbourne, C1
Telephones: MU 6483

BRASS DISCS: Manufacturer has for sale a quantity of 24 Gauge, half hard, 2 1/2 in. diameter Brass Discs. If interested in this material, write to Ref. 8296, c/o "The Australasian Manufacturer."

CUP HEAD BOLTS AND NUTS—EXCHANGE WANTED: Engineering firm has approximately 1,000 each of 7 in. x 1/2 in. and 8 in. x 1/2 in. Cup Head Bolts and Nuts, which they wish to exchange for 5 in. x 1/2 in., 5 1/2 in. x 1/2 in. or 6 in. x 1/2 in. cup head bolts and nuts. Write to Ref. 8299, c/o "The Australasian Manufacturer."

BRIGHT MILD STEEL WANTED: Sydney firm wants to buy 3 in. Bright Shaft Steel, to be used in lengths of 9 feet. Write to Ref. 8300, c/o "The Australasian Manufacturer."

"PERFECTO" FURNITURE POLISH: Inquirer is endeavouring to locate the Work Saver Products Co., makers of "Perfecto" furniture polish. Write to Ref. 8301, c/o "The Australasian Manufacturer."

RED PIGMENTS: Australian manufacturers of Ferric Oxide red pigments, as used in tile making, brick making, red pottery, paints, etc., are requested to write to Ref. 8302, c/o "The Australasian Manufacturer."

SUPPOSITORY MOULDS: Manufacturers of "Suppository Moulds, Children's and Adults' size, are requested to write to Ref. 8292, c/o "The Australasian Manufacturer."

CHILDREN'S HOSPITAL BED-STEADS: If you are a manufacturer of Children's Hospital Bedsteads, write to Ref. 8293, c/o "The Australasian Manufacturer."

AGENCY AVAILABLE: Agency House with engineering knowledge or connections or constructional engineers wanted to represent in all States, well-known Swiss manufacturer of hand-operated hoists, electric hoists and suspended railways. Write Ref. 8288, c/o "The Australasian Manufacturer."

ENGINE STUDS AND WING NUTS: Melbourne firm is in urgent need of thirty gross each of 2 1/2 in. x 7/16 in. whit. Engine Studs and 7/16 in. Heavy Wing Nuts. If you can supply write to Ref. 8289, c/o "The Australasian Manufacturer."

CUPBOARD VENTILATORS: Inquirer is seeking the manufacturer of "Inserta" brand Cupboard Ventilators. Write to Ref. 8294, c/o "The Australasian Manufacturer."

ALUMINIUM MONOSTEARATE: Firms manufacturing Aluminium Monostearate are asked to write to Ref. 8296, c/o "The Australasian Manufacturer."

effective

SANTOMERSE No 1

economical

HOUSEHOLD CLEANERS
HOUSEHOLD WASHING
LAUNDRIES
DISH WASHING
FRUIT & VEGETABLE
WASHING
MILK BOTTLE CLEANING

DAIRY EQUIPMENT
CLEANING
AUTOMOBILE CLEANING
METAL CLEANING
LEATHER PROCESSING
COLD WATER PAINT
MANUFACTURE
TEXTILE PROCESSING

Only small quantities of Monsanto's all-purpose detergent, Santomerse No. 1, are required to produce thorough wetting out, dispersing, emulsifying, penetrating and cleaning action. It is free flowing, can be easily blended with other materials, and rinses off and out fast and completely. Santomerse No. 1 can profitably be used in an endless variety of applications and is supplied as a drum dried powder for formulating into industrial detergents and household cleaners. For specific information about the uses you can make of Santomerse No. 1, write today to:

QUICK FACTS ABOUT SANTOMERSE NO. 1

1. Speeds and improves cleaning by first making water wetter so that it spreads faster and penetrates deeper.
2. Quickly separates and removes imbedded or attached soil, breaks it up and keeps it in suspension so it cannot be redeposited.
3. Functions effectively in hard or soft water... in acid or alkaline... hot or cold solutions.
4. Produces instant lather or foam in water solutions under all conditions.
5. Prevents formation of insoluble curds in hard water.

MONSANTO CHEMICALS (AUSTRALIA) LIMITED

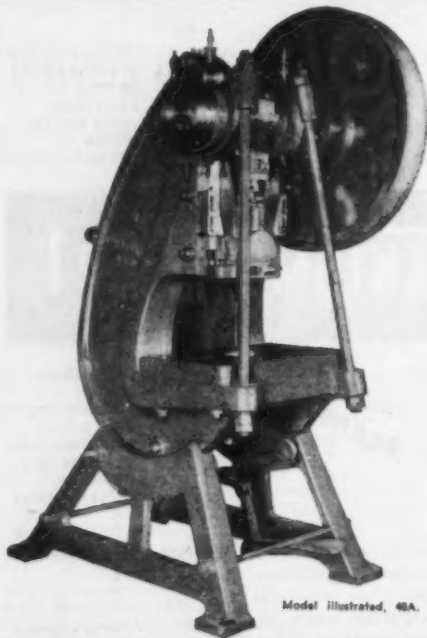
(Head Office) Somerville Road, Braybrook, Victoria, servicing Victoria, South Australia and Tasmania

INTERSTATE SALES OFFICES:
New South Wales, Queensland

MONSANTO AGENTS:
Western Australia, New Zealand



SERVING INDUSTRY... WHICH SERVES MANKIND



"WALLBANK" POWER PRESSES

- ◆ Precision Built
- ◆ Heavy-Duty Inclinable Cast Body
- ◆ Larger Die Space
- ◆ Early Delivery

DESIGNED AND MANUFACTURED IN THE WORKS AND FOUNDRIES OF

NICHOLSON & WALLBANK

Head Office: 87 Parramatta Road, Auburn, N.S.W. 'Phone: UX 7607.

Branch Office: 8 Nelson Street, Annandale, N.S.W. 'Phone: LA 2437.

Model illustrated 224

INQUIRIES INVITED

WRITE: 8 NELSON STREET, ANNANDALE, N.S.W.

MACHINE WANTED FOR WINDING SPIRALS OF ELECTRICAL ELEMENTS: N.Z. firm desires to contact any firm who can supply them with a machine for winding spirals as used for electrical elements. They use 26 to 31 gauge B. & S. nichrome and they are at present winding them on a 5/64 mandril. They want to mount a 5 lb. spool of wire for a continuous spiral. Write to Ref. 6282, c/o "The Australasian Manufacturer."

UNIVERSAL SPIRAL MILLING

ATTACHMENT: Melbourne firm requires a Spiral Milling Attachment for No. 2 MH Cincinnati Milling Machine, must be in first class condition. If you can supply write to Ref. 8290, c/o "The Australasian Manufacturer."

MILD STEEL FLATS: Sydney

firm wishes to purchase any of the following sizes, any quantity: 1 in. x 1 in., 1 in. x 1 in., 1 in. x 3/16 in., 1 in. x 3/16 in., 1 in. x 3/16 in. Write to Ref. 8287, c/o "The Australasian Manufacturer."

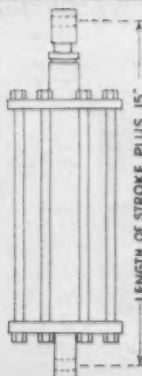
PRECISION WORK IN WAR.

Mr. R. J. Taylor, secretary of Westclox (Aust.) Pty. Ltd., Melbourne, giving evidence before the Tariff Board in support of his company's application for higher tariffs on imported alarm clocks, contended that the local clock-making industry is highly strategic in character. "The industry," he said, "employs a group of essential people available for specialised war work." None can dispute the fact that the successful waging of modern

war demands highly trained precision workers no less than it demands highly trained officers and men. It is well, therefore, that Australian workers should acquire this precision in peacetime.

IMPROVEMENT IN TEXTILE SALES.

Mr. W. H. Bentley, chairman of Tennyson Textile (Holding) Ltd., recently stated that the Company's sales outlook for 1950 was encouraging and factory out-



NEVANDER series 55 pneumatic POWER CYLINDERS

NEVANDER Series 55 pneumatic **POWER CYLINDERS** are $8\frac{1}{2}$ inches outside diameter and are available with any stroke up to the maximum given below; they are normally supplied for clevis mounting, the clevis on the piston rod being removable.

These cylinders are fitted with the NEVANDER lubricating SYSTEM for effectively lubricating the cylinder walls, pistons, glands and piston rods.

Type of cylinder	55-D	55-K	55-T	55-P	55-E
Piston area pulling, sq. in.	26.0	26.0	0	26.0	26.0
Piston area thrusting, sq. in.	28.2	28.2	28.2	0	1.4
Maximum stroke, in.	48	48	48	72	72
Valve required	4-way	4-way	3-way	3-way	3-way
Valve size recommended	1/2 in. up to 12 in. stroke and then usually 1 in.				

To obtain the approximate capacity in pounds, multiply the piston area by the available air pressure and deduct 15%.

These power cylinders are intended for use on clean compressed air at pressures up to 100 p.s.i.

Type 55-D is a double acting power cylinder suitable for many purposes where the stroke is limited by the load.

Type 55-K is intended for more severe conditions, and, therefore, has a cushioned action, which, when correctly adjusted, slows up the platen when it approaches within one inch of either cylinder head, but full power and full speed are available for moving the platen away from the cylinder head again. Types 55-T and 55-P are single acting power cylinders in which the return stroke must be performed by the load.

Type 55-E is for such purposes as pulling up a furnace door, the cylinder normally being full of compressed air, resulting in 1.4 sq. in. thrusting the piston rod out of the cylinder; when the thrusting side of the piston is exhausted to atmosphere, 26.6 sq. in. of piston area pulls the piston rod back into the cylinder.

A Product of

THE POWER ELEMENT CO.

Box 7, Edgecliff, N.S.W., Aust.

put was secured for some months ahead.

He said the company was meeting fierce overseas competition.

The subsidiary's turnover connected with commission dyeing and finishing departments increased considerably, because of the installation of special machinery.

INTERNATIONAL FOOD EXPOSITION.

Australian producers of specialized foodstuffs, and food equipment manufacturers who desire to exhibit their items as possible dollar earners, may have this opportunity in Chicago, Illinois, in June, 1951.

American Consul General, Mr. Donald W. Smith, has announced that an International Food Exposition will be held at Navy Pier, Chicago, Illinois, from June 9 to 13, 1951, and would cover not only food and food products, but also a large variety of items sold in grocery stores and products which grocers find useful in the operation of their stores.

In addition to special food products which appeal to the American taste, the U.S. Department of Commerce and the E.C.A. government agencies which are interested in the exhibition, believe that many countries have specialized equipment such as scales, meat cutting implements which their firms may wish to exhibit at this International Food Exposition. Trade associations, business firms or individuals interested in exhibiting food products and/or food store equipment, Mr. Smith said, should communicate directly with the National Headquarters of the National Association of Retail Grocers at 360 North Michigan Avenue, Chicago 1, Illinois.

The National Association of Retail Grocers is one of the oldest and largest trade associations in the United States. It is the recognized national spokesman for the nation's 375,000 independent retail grocers who last year did a total business of approximately \$20,000,000,000. These independent grocers have facilities to serve the food requirements of 100,000,000 persons in the United States. The Association has almost 600 State and local associations of food retailers affiliated with it. These affiliated bodies are located in every State and section of the country.

NO SPECIAL LEAD AND ZINC TAX.

The Commonwealth Government has stated that it is not proposed to impose a special tax of any kind on sales of lead and zinc produced in Australia.

The Government believes it is not necessary to impose the tax because base metal companies already subsidize the local market.

Base metal companies were now supplying about 104,000 tons of lead and zinc—more than ever before—to the local market at an agreed cost of production price.



SOUND REASONING

Because Cooper Split Roller Bearings are the only roller bearings made in halves throughout — installation is simplified and there's no need to dismantle shafts for maintenance and examination. All parts are easily accessible.

• ADVANTAGES

All the usual advantages of anti-friction roller bearings—easy starting, power saving, low cost of lubrication, compact design, minimum wear, extra long life — are part and parcel of Cooper . . . PLUS the unique split feature which gives the exclusive additional advantages of unexcelled simplicity of installation and maintenance.

• SIMPLE DESIGN OF MACHINERY

Cooper Split Roller Bearings are applied with equal facility to plain shafts, sunk journals, crank shafts, crank pins, and between fittings such as gear wheels fixed on shafts. Special machining of the shaft for fixing the inner race is avoided, and with the advantage of split housings, the simplest and most economical machine design is achieved.

• CONTINUOUS SERVICE AND ECONOMY

The ever-increasing demand for greater output must sooner or later result in the need for plant renewal. The cost of necessary stoppages is minimized by the use of Cooper Split Roller Bearings—dismantling and re-assembling can be effected with ease, speed and economy.

• LONG LIFE AND EFFICIENCY

Cooper Split Roller Bearings have achieved remarkable performance records, and many installations are known where continuous service has been given for over 25 years. Such records give striking testimony to the efficiency, long service and reliability of Cooper on the job.



DISTRIBUTORS

COOPER

SPLIT ROLLER BEARINGS

N.S.W.: NOYES BROS. (SYDNEY) LTD., Sydney — Newcastle — Wollongong. QUEENSLAND: NOYES BROS. (SYDNEY) LTD., Brisbane — Mackay. VICTORIA: JAMES MUNDAY & COMPANY, Melbourne — Geelong. SOUTH AUSTRALIA: E. TRELIVING & SONS LTD., Adelaide. WEST AUSTR.: WILLIAM ADAMS & COMPANY, Perth.

PROGRESS OF BRADFORD COTTON MILLS, SYDNEY.

Sir Walter Massey-Greene, chairman, speaking at the recent annual meeting in Sydney of Bradford Cotton Mills Ltd., recorded that difficulties encountered in the company's new mills

in Victoria and New South Wales have been overcome successfully and that production is proceeding satisfactorily. The mill at Bendigo, Vic., which is to engage in the production of cotton tyre cord and tyre cord fabric, is expected to be operating on two full shifts before the end of December next.

BIG INCREASE IN IMPORTS.

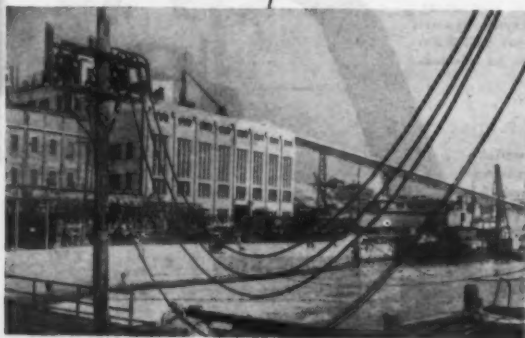
Australia, in the two months of the current financial year, has spent more on imports from abroad than in the whole of 1938-39. Imports for the period amounted to £114,612,000 and exports £87,301,000. This has resulted in a record unfavourable

ADVANX

WILL SOLVE YOUR PROBLEMS IN RUBBER
ADVANX RUBBER & TYRE CO. PTY. LTD., NEILD AVENUE, RUSHCUTTERS BAY,
SYDNEY, AUSTRALIA, PHONE FA 8101.

BEATING THE BLACKOUTS!

When special high-tension rubber insulated cables were urgently required . . . to connect diesel-electric supply ships to the Balmain Power House to help beat the blackout in Sydney . . . it was only natural that the Electricity Commission of N.S.W. should turn to C.M.A. With its background of more than 100 years experience in the manufacture of electric cables, Cable Makers Australia Pty. Ltd., proved more than equal to the task, delivering the 6.6 k.V. Tough Rubber Sheathed Cable required ahead of schedule!



Manufactured by
CABLE MAKERS AUSTRALIA PTY. LTD., LIVERPOOL, N.S.W.

ELECTRICITY COMMISSION OF NEW SOUTH WALES
Kelvin House,
15 Castlereagh Street,
Sydney, N.S.W.
14th September, 1950.
The General Manager,
Cable Makers, Aust.
Pty. Ltd.,
111 Macquarie Road,
Sydney.
Dear Sir,
REF TO YOUR CABLES FOR BALMAIN VESSELS.

THE ELECTRICITY
COMMISSION OF N.S.W.

Chooses **C.M.A.**

Due to the severity of the shortage of cables, the Commission is unable to supply the cables required for the Balmain Vessels. The Commission is therefore unable to supply the cables required for the Balmain Vessels. The Commission is therefore unable to supply the cables required for the Balmain Vessels.

C.M.A.

Regd. Trade Mark Nos. 36936-7-8

WIRES·CABLES FLEXIBLES

trade balance of more than £27 million, compared with a favourable balance of nearly £500,000 for the corresponding period of last year, says the Commonwealth Statistician, Dr. Roland Wilson. Imports for the whole of 1938-39 were just over £113 million.

ACID PRODUCTION IN W.A.

Shortages of labour and of materials are making increasingly difficult the execution of the plans of Cresco Fertilisers (W.A.) Ltd., to erect additional acid plant at its superphosphate factory. At the moment, production is not sufficient to meet demand. This situation will be rectified, however, when new plant comes into operation early next year. A new plant nearing completion at Albany will, when in full production, also greatly increase total output.

HONOUR FOR STANDARDS' ASSOCIATION.

During the past week, the Governor-General, Mr. W. J. McKell, presented a Royal Charter to the Standards' Association of Australia, which body establishes scientific, technical, and commercial standards. "The Standards' Association," said Mr. McKell, "does a great service with no desire for profit. By this Charter, the King recognises this service." Accepting the Charter at a ceremony at Science House, Sydney, the association's chairman, Dr. T. H. Upton, said that the association will not take the title "Royal" following the granting of the Charter.

PROGRESS OF WELDED PRODUCTS LTD.

Mr. F. A. Quinn, chairman, announced at the recent annual meeting of Welded Products Ltd., Alexandria, New South Wales, that his company is buying additional plant overseas and, because of the shortage of local supplies, steel is also being purchased abroad. "The company," he added, "recently acquired the Australasian selling rights for 'Rysteel' metal working tools, manufactured by Ryde Steel Pty. Ltd., Ryde, N.S.W., and diamond emery dressers, drills, and similar tool pieces turned out by Vogue Products Pty. Ltd., Adelaide."

LOCAL PRODUCTION OF NEW WOOL-GREASE DERIVATIVES.

Drug Houses of Australia Ltd. announce the recent purchase of the plant units of a company manufacturing lanoline. In addition to various grades of lanoline, Drug Houses anticipate the production of certain derivatives of wool-grease not at present being manufactured within Australia.

SHEET METAL WORKING MACHINERY

BEADING AND SWAGING MACHINES, FOLDERS
CURVING ROLLERS, CIRCLE CUTTERS
GUILLOTINE SHEARS, BURRING
MACHINES, ETC.



FOR
FURTHER
DETAILS
WRITE or CALL

**JOHN HEINE
& SON PTY. LTD.**

Allen Street, Leichhardt, N.S.W.

PHONES: LM 1444.

Telegraphic Address — "HEINSON" SYDNEY
or any of our Representatives:—

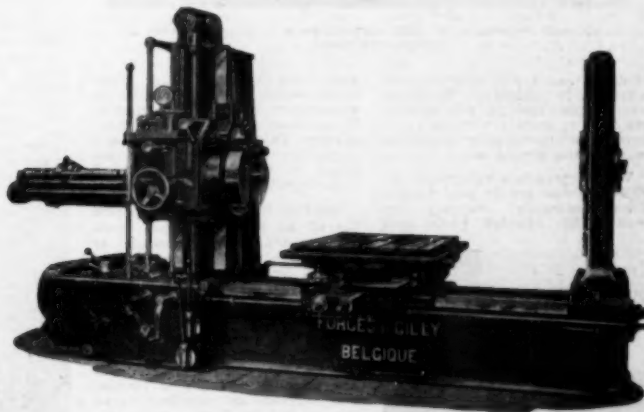
McPherson's Ltd. Melbourne, Adelaide and Perth
Engineering Supply Co. of Aust. Ltd. Brisbane
John Chambers & Son Ltd. New Zealand
I.H.A.S.

WE GUARANTEE

*to deliver this machine
within 5 months*

HORIZONTAL BORERS

These high-grade precision machines are manufactured at the famous Forges de Gilly factory in Belgium. They represent the finest European manufacturing skills, and will give a lifetime of magnificent service. Available in 2½ in., 3½ in., 4 in., 5½ in. and 6½ in. traversing spindle.



Qualos

Shipment just arrived. Inspect now.

SALES PTY. LTD.

89-101 Lothian Street
North Melbourne

Inspection Aids Production

Air Gauging System controls machine slides, giving precise indication of position

The speed and complication of modern quantity production has made it increasingly difficult to improve quality without increasing costs. One of the first steps should be to give the machine operator the means of verifying, with sufficient accuracy, the correctness of the dimensions he is producing during the actual machining run. This gauging at the source of production controls the precision of each part, preventing the production of faulty parts and avoiding the discovery of scrap when it is too late.

BY adopting suitable instruments as aids to production, instead of as judges, it will be found that work can be produced to closer limits, and the ancillary control be greatly reduced.

A gauging medium having the required degree of accuracy and magnification should be given to the operator himself to enable him always to see exactly what he

generally speeding up precision machining. The operator will have greater confidence and there will be a saving, too, in materials handling and space.

"On the spot" inspection and the checking of random samples serves as a definite aid to production. It provides at one stroke a check on the setting of the operator's gauges, the machine setting

These characteristics called for in gauges used as an aid to production are generally met by air-operated equipment. The system, described by Mr. Richards, of production gauging is evolved around this basic equipment and

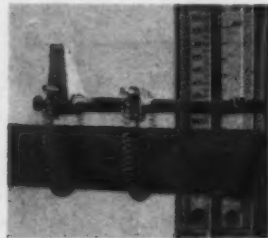
The gauging installation consists of two units: (1) An air controller, which regulates pressure and flow and incorporates the manometer; and (2) a gauging head which may take the form of a comparator, internal or external.



On-the-spot inspection at high magnification is practical with air gauge equipment.

is doing, and the accuracy of the work he is producing. It should also ensure that he will use his machine in such a way as to be certain of consistently producing work to the correct size.

With appropriate equipment unskilled labour can be used to produce accurately, reducing the number of rejected parts, and

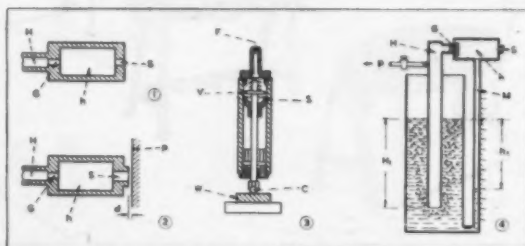


Extensometer shown here operates on air gauging principle. Alternative type designed on a 2mm. base length can be used in relatively confined spaces. Normal magnification of short base unit is X 200,000.

and condition, and the limits within which the machine can be expected to operate economically. It has been proved that the more effective linking of production and inspection can bring important gains in morale and improved inter-departmental relations.

Suitable instruments are called for of the indicating type. Such equipment allows the operator to maintain a constant level of accuracy by observation of the actual dimension, not merely whether he is "within limits" or not. They must have high magnification, be initially accurate, and maintain that accuracy over long periods, since these characteristics are essential for ease of reading and sureness in recording. And they should be directly applicable as an aid in machining.

Gauges and instruments giving accuracy and high magnification also need to be robust enough to withstand workshop use on machine tools, says Douglas Richards in "The Machinist". Simplicity of operation is essential for use by unskilled labour, and it is important that they be flexible (i.e., non-specialized) in application.



Methods of measurement are: (1) by restriction of jet as in checking flow through carburettor jet; (2) by variation in the flow, governed by space between jet and surface of part being measured; (3) relayed measurement where measuring jet is formed by annulus between a valve and its seating. Diagram (4) shows the simple pneumatic control unit of Solex equipment.

is backed by the provision of simple universal ancillary units.

Air-operated gauging methods consist basically of the direct or relayed transformation of the variations of dimensions of a part, into changes in the rate of flow of air. These changes are indicated by arranging for them to cause alterations of pressure which can be clearly seen on a manometer.

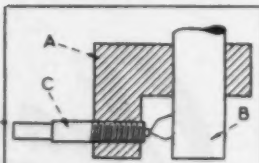


Snap gauge is being checked here with the aid of an internal comparator gauge unit. Accuracy of readings claimed is better than 0.00002 in.

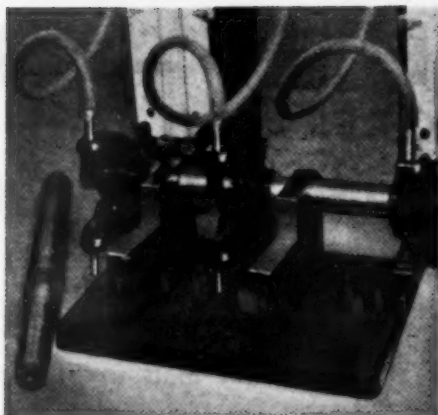
nal, a plug gauge, a gauge, or similar unit, according to the part to be measured.

METHOD OF AMPLIFICATION.

Small variations can be amplified as shown in the diagram (1) on this page. Two orifices, G and S, are placed in series and fed with compressed air. If the initial pressure H of the air is constant the flow through G and S, and hence the pressure h which will exist between G and S, only depends on the cross-sectional areas of these two orifices. If the area of the first orifice G is fixed, a manometer, placed between G and S, will record variations in the cross-sectional area of S by registering the pressure h, which is



Tool setting gauge also makes use of an air gauging comparator unit, giving precise indication of tool adjustment on gauge.



Self-locating cee gauge set-up is constructed from standard elements for special job. Equipment checking four diameters on stepped shaft, is conveniently located near the machine.

directly, and only, influenced by the flow of air through S.

It will be seen that if the fixed orifice G (known as the control jet) is very small, only small variations of S (known as the measuring jet) will be needed to cause proportionately large variations in the pressure h, and inversely. As the cross-sectional area of the measuring jet S increases, the pressure h will decrease, and vice versa.

There are three methods of causing variation in the measuring jet S. The simplest method is by restriction. In that case the orifice S is itself the part to be measured—a carburettor jet, for example. Generally, the "size" to be measured in these circumstances is flow, not dimension.

Using direct measurement, as shown in diagram (2), the measuring jet S is fixed, and the flow of air through it varies because the

jet is nearer to, or farther from, the wall of the part to be measured. The flow can then only be influenced by variations in the distance d between the jet and the wall P of the part. In such cases, more than one measuring jet S may be used. If two are mounted in the skirt of a plug gauge at either end of a diameter, the insertion of the plug into a cylinder will allow measurement of the diameter of that cylinder by measuring the total flow through both jets.

With relayed measurement the measuring jet diagram (3), is formed by the annulus between a valve V and its seating S. The tip C of the valve stem rests on the part W, and variations in the size of the latter cause the valve to be lifted to a greater or lesser extent off its seating. The valve is contained in a body, the whole forming a comparator unit. Air is

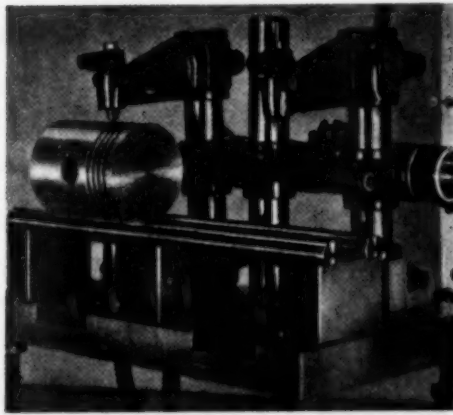
supplied at F from control jet G, not shown.

In determining the original relationship, fixed in design, between the control jet and the measuring jet or jets, it is quite easy to obtain high magnifications of dimensional variations. The system permits sensitivity to variations of less than 0.00001 in. In none of the three systems above is any amplification mechanism introduced which will cause complication or inaccuracy through wear.

This principle and the basic developments of it only apply if the air is delivered to the system at a constant pressure, uninfluenced by atmospheric conditions at any time. There must be no leakages of the air between the control jet or the measuring jet.

PRESSURE CONTROLLED.

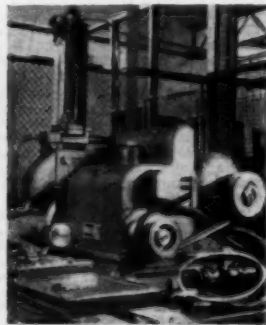
Constant pressure is obtained by means of a hydraulic overflow. Air from a compressor or factory air line is fed into the air controller, shown in the diagram (4). As long as the air line pressure P is higher than the pressure H in the open-ended dip tube, which is governed by the length H, that the tube is immersed in the reservoir, air will escape by bubbling from the tube, and the pressure of air in front of the control jet G will be constant. Increase or decrease in air line pressure will, within limits, merely cause a greater or lesser degree of bubbling. The air at controlled pressure then passes through the control jet, which meters the amount at that pressure H which can be delivered to the measuring jet S.



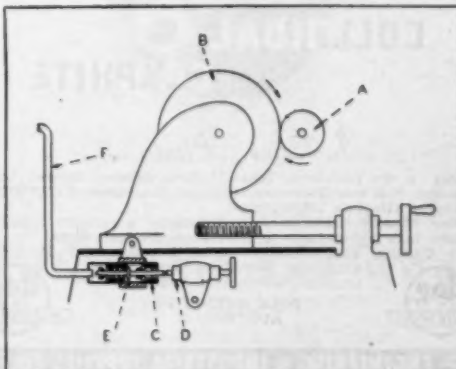
Universal comparator can be built as a self-locating set-up from standard gauging elements. The unit shown here was arranged for production gauging internal combustion engine pistons.



Plug gauge operating on the direct measurement principle, has two air jets at either end of a diameter. The unit can be conveniently mounted on the machine, adjacent to the operating position.



Latest set-up is to use air-operated feed gauge, mounted on machine slide, the movement as slide approaches the end of its traverse being indicated by manometer on the air control unit.



Feed gauge unit as mounted on the wheelhead slide for indicating movement of slide is shown here diagrammatically. Workpiece is represented at A, grinding wheel B, comparator unit C, adjustable stop D, valve E, and connection to air controller F.

FOSTER TYPE 37-G2

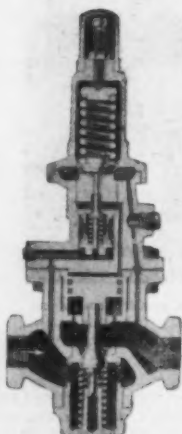
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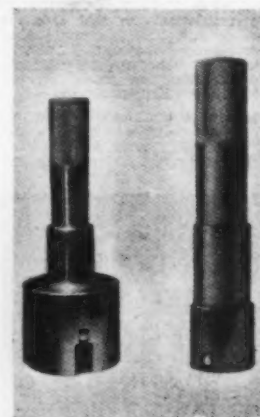
DIMENSION CONTROL FLOW.

The manometer M is placed between the control jet and measuring jet, and variations of flow through them cause the pressure h to push the water column to a greater or lesser extent down the manometer tube, varying the length h. The only variations are those of the flow through the two jets; this simultaneously balanced flow in series through the orifice of known size G and the jet S eliminates any influence of the ambient atmospheric conditions such as temperature, humidity, barometric pressure, and so on. Thus, variations in flow can only be caused by variations of S—that is to say variations in the dimension to be measured.

The air controller is connected to the gauging head by means of an air-tight flexible connection of suitable length. This instrument can be provided in single or dual reading types. Control jets can be readily changed to suit the gauging head used.

Air operated plug gauges are used for bore measurement. The jet plug gauge uses the direct measurement principle and has two jets, one at either end of a diameter. Readings of diameter are normally given in size of the part at a point opposite the measuring jets, so that taper and ovality can also be checked by sliding or rotating the gauge in the bore. The measuring jets are recessed slightly below the surface of the gauge, which surface itself is smaller than the mini-

mum size to be measured. The distance between the jets is not affected by wear for a long period.



Internal plug gauges are of the jet type, or of the comparator plug type shown here, in which contact rods bear on internal surface and operate a valve which governs air flow.

and entry of the gauge into the part is easy; movement of the gauge in the bore, there being always clearance, does not affect

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the reading. An application is shown on page 46.

Jet plug gauges are used for diameters between 3/16 in. and 6 in. and each is ground to a particular size. Measuring range varies from 0.001 in. to 0.0025 in. Sensitivity is greater than 0.00005 in. and magnification varies inversely to the range. These gauges are used to measure small bores, thin walled parts, and all other bores which can be checked in a clean state. They are particularly advantageous in the cases of bores with fine, easily marked finishes.

The comparator plug gauges, illustrated, use relayed measurement by means of a comparator unit. The measurement is made by two contact rods fitted into a body, which is mounted in a shell. The comparator unit and body remain identical for the whole range of sizes checked by the gauges—1-7/16 in. to 6 in. A range of contact rods of varying lengths covers the same capacity, and the simple guiding shell is ground to suit the size to be checked.

RANGE EASILY CHANGED.

Comparator plug gauges are unaffected by the cleanliness of the part being checked (during

machining, for example), and are robust. Measuring ranges at each setting are from 0.0025 in. to 0.005 in., the change in range and magnification being made merely by changing the control jet and scale on the air controller, not by any complicated device in the gauging head itself. Sensitivity in each case is greater than 0.00005 in.

By combining standard gauging elements with comparator units, it is possible to build up installations ranging from a simple workshop comparator to more complicated self-locating set-ups of the type shown. The component parts of such a set-up are capable of being disassembled and built up into different installations. At the same time, high accuracy is maintained and the installation is special in so far as the application is concerned.

"MACHINING APPROACH" SCALE.

Two types of scale are available with the comparator unit, the different range and magnification being obtained by changing the control jet and scale on the air controller. The "machining approach" scale has a range of 0.006 in., the magnification in-

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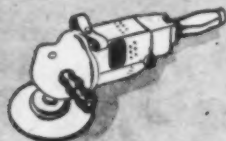
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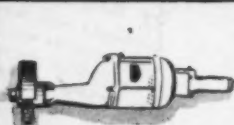
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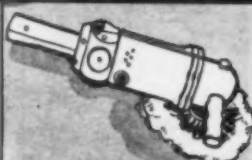
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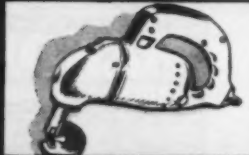
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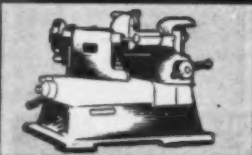
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creasing as zero is approached. The inspection scale has a more evenly spread magnification and a range of 0.0025 in. Sensitivity is greater than 0.00005 in.

Self-locating "cee" gauges are intended primarily for the simultaneous gauging of more than one dimension on a straight stepped or cranked shaft and for similar

purposes. Used in conjunction with a simple fixture, as shown on page 48, the "cee" gauges give readings independent of each other and of the operator. Location of the part is provided by the mounting itself, and the reduction of "table" surface reduces the effect of wear. The same ranges and magnifications apply

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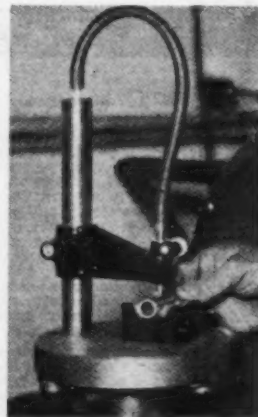
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as for the universal comparator, already described, since the same unit is employed.

There are a large number of cases where improvement of quality and lowering of production costs can be achieved merely by the use of a gauging instrument reading in "size" on, or beside, the machine, in conjunction



Simple comparator for use in the shop, can also be built up from standard gauging elements. All such units can readily be disassembled and used again in other set-ups.

with an air-operated feed gauge mounted on the slides, as shown on page 45. These cases are those where the work is rotating, such as a cylindrical grinding

(Turn to page 55.)

Institution of Production Engineers (London) Establishes Adelaide Section

Founded in 1921 and incorporated 10 years later, the Institution of Production Engineers (London) recently held its inaugural meeting in Adelaide. A brief outline of the aims and activities of this organisation is given here.

THE Institution has for some time had flourishing sections in Sydney and Melbourne, and it is synonymous with the industrial growth of South Australia, that the new section has now been formed. There is an Australian sub-council of the Institution.

Held in high esteem throughout the world, the Institution has established sections for its members in all major industrial cities of the United Kingdom and Northern Ireland, in South Africa and India.

The first president of the Adelaide section is Mr. W. Gwinnett, managing director of Rubery, Owen & Kemsley Pty. Ltd., assisted by a committee comprising Messrs. J. H. Law, W. E. Standish, H. S. Dean, C. J. Clarke, J. A. Messenger, E. H. Smith and H. J. Baker.

Mr. Law is a consulting engineer; Mr. C. J. Clarke is works engineer of Tecalemit (Aust.) Pty. Ltd.; Mr. J. A. Messenger was on the staff of the Long Range Weapons Establishment at Salisbury, but is joining Chrysler Dodge DeSoto Distributors Ltd.; Mr. Standish is administrative assistant to the managing director of Kelvinator (Australia) Ltd.; Mr. Dean is consulting engineer with the South Australian Government's Industries Advisory Committee; Mr. Smith is at British Tube Mills (Aust.) Pty. Ltd.; and Mr. H. J. Baker is with W. H. Burford & Sons, Dry Creek. The secretary is Mr. Law, his address being 12 Fullarton Road, Netherby.

The birth of the Institution took place in the United Kingdom in 1921, and resulted from industry's new outlook following the considerable uplift in production ideas and methods occasioned by the munitions programme for World War I. It was felt by a small band of industrial leaders at that time, arising out of their experiences during this conflict, production engineering was a science towards which little, if any, specialised consideration had been given up to that point. They felt that if ever British industry was to overcome the trials currently facing them and to develop in the future, it was essential that engineers trained in the peculiar art of production engineering should be brought together to discuss their mutual problems and to so organise their activities within the Institution that young students and graduates and young engineers setting out upon their life work, would be enabled to profit by the experiences available to an Institution

such as theirs.

It was 10 years later, on the 6th June, 1931, that the original foundation members of the Institution, who had then been operating for some considerable time, put their hands to the Memorandum of Association of the Institution.

The names of these foundation members are to-day very well-known in industrial circles both in the United Kingdom and other places overseas. For the sake of interest their names are: E. W. Hancock, at that time Works Manager of the Daimler Co. Ltd., now Works Director of Rootes; R. W. Bedford, Works Manager of George Kent Ltd.; S. Carlton-Smith, Chairman, Adamant Engineering Co. Ltd.; John A. Hannay, Mechanical Engineer, Austin Motor Co. Ltd.; W. G. Grocock, Works Manager, B.T.H. Co. Ltd.; Raymond J. Mitchell, Production Engineer, Yorkshire Copper Works Ltd.; H. E. Weatherley, Engineer, London; Robert Hutchinson, Engineer, London; and the late Richard Hazelton, who was General Secretary of the Institution for many years.

The Institution then was properly formed, and upon the foundations laid has expanded its activities down the years until presently it has sections in all major industrial cities in the United Kingdom and Northern Ireland, and flourishing sections in Bombay, Calcutta, Johannesburg, and in the Commonwealth of Australia, sections in Sydney, Melbourne, and now in Adelaide.

Past Presidents include Lord Nuffield, Sir Alfred Herbert, and Dr. Herbert Schofield. The President now is Major-General K. C. Appleyard, C.B.E.

The science and practice of Production Engineering as defined in the Institution's qualifications for membership fall under two headings:—

(a) As Applied to Engineering Industries: For engineers with the prescribed qualifications, the science and practice of production engineering embraces all important phases of the creation of engineering products, including those used directly for productive purposes in all industries; from Works Direction and Management, through numerous branches of specialisation covering responsibility for such functions as production planning, factory lay-out, routing and methods of manufacture, jig and tool design and manufacture, technical estimating, rate fixing, time and motion study, inspection, production control, etc.

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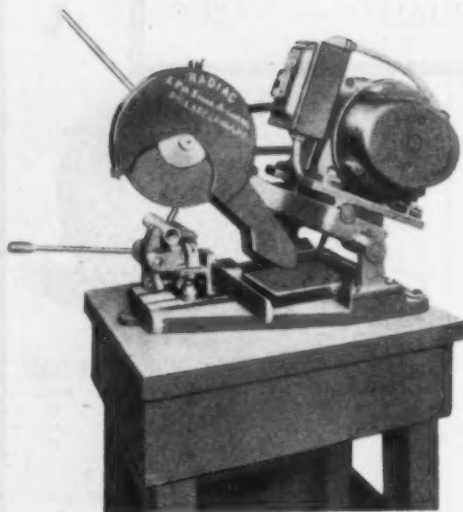
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(b) As Applied in other Industries: For engineers with the prescribed qualifications, who are engaged in industries other than engineering, the science and practice of production engineering is that the work being done by them requires the application of the principles specified under the previous heading.

Providing they satisfy these requirements, metallurgists, consulting engineers, sales engineers, engineers employed in technical education for production and all other engineers who, in their ordinary work, use or have used the science and practice of production engineering, all such persons may be deemed by the Council of the Institution to be, or to have been, engaged in production engineering.

The grades of membership within the Institution are: Full members, associate members, intermediate associate members, associates, affiliates, graduates and students. In regard to this latter qualification, it is laid down that students must be persons between 16 and 25 years of age, who are following an approved form of training and who are considered suitable for election by the Council. Students must qualify for transfer to a higher grade by the time they attain the age of 28 years, otherwise their membership will lapse.

This latter grade has been explained in detail, as one of the prime desires of the Institution is to encourage the youngsters in the science and practice of production engineering. They are, therefore, interested in taking the young man right from the point where his educational training is beginning to take definite shape until the time when, having finished his education and commenced upon his engineering career, he can be guided by the Institution and eventually contribute usefully to its activities.

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"Key personnel is playing a big part in Australia's industrial development, and this is typified magnificently in the R.V.B. organisation, where you men have set such a high standard in efficiency and control," said Mr. R. V. Butler, Managing Director of the R.V.B. Engineering Products Pty. Ltd., when speaking to R.V.B. Executives and Key-men at a recent Conference and Dinner held at the Hotel Australia, Melbourne.

Continuing, Mr. Butler said: "More than ever before the Australian Automotive Products Manufacturing Industry needs more co-operation and initiative from every member if it is to maintain its high position in the world of manufacture. The R.V.B. Organisation is fortunate in having one of the most efficient and most conscientious group of key-men that any manufacturer could boast. Many have been with the organisation since the early days back in 1935, when the staff was only a handful. These men have progressed and prospered with the Company.

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showing, is the type of spirit which I, as your Managing Director, have always worked and wished for. What you are doing, remember, is not just for a personal gain, but represents a contribution to the progress of the automotive industry our great country—Australia—is building up to-day.

The function was arranged as an effort to bring all members of the executive staff and key-men closer together, and to further the excellent harmony which exists in this modern and progressive organisation. The chairman was Mr. S. Baulch, secretary of the Company, who gave a welcome to the officials and to guests, among whom were Mr. Kelly, of Kelly Automotive Products Ltd., of Wellington, New Zealand. Mr. Kelly, in replying, pointed out the fine response to Australian-made products that exists in New Zealand to-day. Mr. Kelly paid a high tribute to the quality of R.V.B. products, and he said without fear of contradiction that no manufacturer in the world can surpass the quality and workmanship of R.V.B. products, which must make all executives and officials of the Company, very proud indeed.

The function wound up with a splendid musical and entertainment programme.

Included in the gathering were key personnel of the Sales and Advertising Production Department, Planning and Designing Department, General Office, Costing and Despatch, Stores Con-

trol, as well as representatives of the Company's Advertising Agency.

TARIFF DELAYS UPSETTING TEXTILE PRODUCTION.

"Delay in ratifying the new rayon tariff," said the chairman of Bruck Mills (Aust.) Ltd., Mr. R. J. Vicars, on a recent occasion, "has upset the general development of this enterprise. It is recognised everywhere that a new industry needs protection for its establishment. If the country is to be developed, it must be made safe for overseas firms to start here. Rayon weaving is one of this country's first major post-war developments. Rejection or alteration of the proposed new rayon tariff could set back the company's development by many decades." He went on to point out that the delay in ratification already has caused an upset in plans, production being switched to goods in short supply or covered by existing tariffs to permit profitable operation. "It is difficult enough to start an industry of magnitude," he concluded, "but to be forced to change and switch types of output in the early years only leads to delays in achieving efficiency and disturbs the employee who is not fully trained."

Immediate and full ratification of the new rayon tariff is, obviously, the only satisfactory solution of the difficulties here outlined.

Industrial Research is Industry's Intelligence Service

(By the Rt. Hon. R. G. Casey, M.P., Minister for National Development.)

To be able to anticipate future trends in supply and demand with a reasonable degree of certainty is, as everyone in commerce and industry knows, one of the first essentials of stable industry. But too often many industrialists in Australia have had to fall back on intelligent guesswork. On scores of other questions they have had to face in their own industries there has been no readily available source of reliable guidance.

More advanced industrial nations have developed services to cater for this demand for industrial intelligence.

INDUSTRIAL research is to industry what military intelligence is to the Army. To neglect either is to court failure.

Many Australian industrialists have felt at a disadvantage in their planning because of their inability to get a clear and reliable picture of what was happening in various branches of industry in this country.

They have not hesitated to criticise the scanty attention paid in Australia to this aspect of our industrial progress.

I suppose no industrialists in the world are better informed about conditions in their own fields of activity than those of the United States of America. A wealth of research services guides them through the hazards of a highly competitive economy in which the rewards of good judgment are considerable and the penalties for lack of judgment are extinction.

Management consultants, research specialists, trade organisations, and government agencies keep all aspects of industrial activity constantly under the microscope. Information about changes in industry, profit ratios, inventory levels, and so on, is kept up to date for the guidance of higher management. Industry is served by the most elaborate array of advisory services.

Industrial expansion without the benefit of these aids can be wasteful, destructive, and in individual cases, needlessly ruinous. The stress placed on industrial research in the United States and Great Britain is born of experi-

ence of the cost of groping in the dark.

It has been a long-felt need in the industrial life of Australia. Even pre-war when our economy was more predominantly rural and the pattern of secondary industry was less complex than it is to-day, there was a considerable element of "hit and miss" in our industrial planning.

Our highly developed rural industries, on the other hand, have for years been backed by organisations equipped for research, and we have known a lot about the structure and supply and demand position of these industries in relation to world markets.

Events of the past decade have transformed the Australian industrial scene. Manufacturing activities have expanded enormously. We have advanced into many new and diverse fields of production. Industry is still growing in magnitude and variety, and is likely to maintain the tempo of its expansion. Our population is increasing at the rate of round about 250,000 a year. Migration is bringing new customers and new workers to give fresh impetus to the growth of our industries, and the general expansion of the Australian economy must continue.

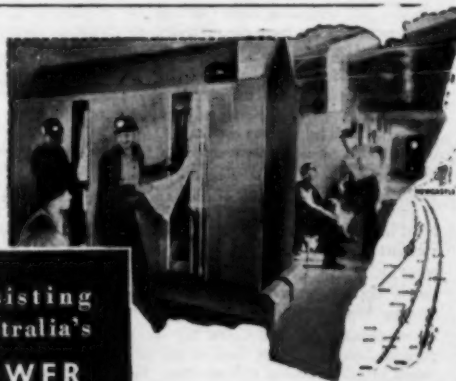
Methods that sufficed under pre-war conditions will not do in this present era of development. Forward planning in both small and large concerns must be based on the greatest possible amount of factual information, on expert interpretation of the facts, and on

a wider appreciation by industrialists of their own industries and their place in the nation's fast expanding economy.

One significant move in the direction of meeting this need has been the setting up of an industrial research service within the Division of Industrial Development of the Ministry of National Development to make systematic fact-finding surveys of major industries. Results of these surveys are published in a continuing series of brief industrial re-

views—the first of their kind to appear in Australia.

They present a concise objective picture of each industry dealt with, and already they have proved to be of considerable value. They cover the organisation of the industry, including number, size and location of firms. They discuss the state of competition, current and prospective demand for the industry's products, and the ability of the industry to meet those demands. They deal with such all-important factors as plant



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GLOSCOAT gives excellent protection in all conditions likely to be encountered, particularly in hot, humid atmosphere or in extremes of cold. Furthermore, the coating can be easily removed by a simple stripping operation, revealing the components ready for immediate use, lubricated with a film of pure lubricating oil, automatically exuded from the plastic coating.

NOTE: The removed GLOSCOAT can be remelted repeatedly for further use.

METHOD OF APPLICATION: GLOSCOAT is applied by a simple dipping operation, using a special melting tank, as illustrated, to avoid local hotspots and overheating of the plastic.

A temperature of 180°C.-200°C. is recommended for coating purposes, working within these limits, the thickness of coat can be varied to suit individual requirements. For example, a thickness of .080in. is applied when the article is dipped at 190°C.

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The light coloured transparent coating enhances the sales appeal of the coated article. For example, data engraved on gauges, tools, etc., encased in GLOSCOAT is visible to clients and articles can be handled freely without the danger of corrosion from the moisture of the fingers. Its high impact resistance gives protection against accidental damage through dropping.

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- GLOSCOAT is easy to apply and simple to remove.
- GLOSCOAT eliminates preservatives and desiccants.
- GLOSCOAT reduces bulk of packed articles, an important consideration if transmitted by air freight. Parts coated are ready for immediate use when received, as no degreasing is necessary.

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and equipment, labour, and raw materials, and as far as possible they try to estimate general prospects for the industry.

Obviously this kind of information, coming from an independent and unbiased source, is of prime importance, particularly to thousands of small-scale manufacturers who could not afford to conduct wide research in their industries on their own account.

So far, 21 reviews of individual industries have been completed and published. Eight more are now being prepared, dealing with foundries, steel, bricks, building boards, cement, soap, cotton textiles and knitwear.

In turn other industries will come under survey until a comprehensive field of industry has been covered.

First step in every survey is to bring together all existing information available from published sources, and from the very considerable store of knowledge on Australian industries accumulated by the Information Section of the Division of Industrial Development. The obvious gaps left by bare statistical records are filled in by wide personal inquiries among executives in the industry.

They are invited to supply—in confidence—details of manufacturing techniques, plant capacity actually in use, and the needs for new plant. Information is sought on supply of raw materials, on manufacturing techniques, and on plans and opportunities for expansion.

Some executives at first showed a natural hesitation to disclose this type of information. When the earlier reviews were published, however, they realised that all detailed information lost its identity in the general picture which it was used to build up.

They appreciated the importance of the reviews also, and there is now a general willingness to co-operate so that the reviews made of their industries will be of the maximum value.

Manufacturers realise now that here for the first time, is an unbiased over-all picture of their industry. No single manufacturer or few groups of manufacturers within any one industry could hope to assess their own position so fully and objectively.

Many executives who appreciate the aims of this work have commented favourably on the competent manner in which the reviews have been prepared. Quite understandably some have disagreed with certain of the conclusions drawn. Unanimous agreement on matters of opinion was hardly to be expected. But the opinions expressed were based on an impersonal and expert weighing of the greatest amount of available evidence.

Surveys have disclosed room for expansion in some industries. In some others they have given forewarning of over-production. Some large firms who were contemplating plans for expansion without knowing the full productive capacity of their industry, heeded warnings in the Division's review that existing plant capacity was

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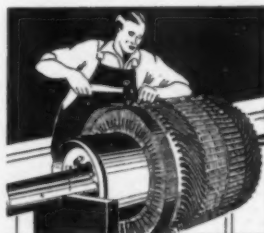
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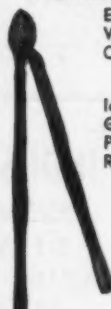
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already in excess of the predictable demand. They were thus able to avert serious losses.

The survey of the construction and excavating equipment industry emphasized the great opportunities for expansion in this field presented by Australia's heavy equipment needs for industrial expansion and national development. It revealed an estimated back-log of 3,200 crawler tractor units, with an estimated current demand for 1,600 units a year, and thus brought into relief the importance to our national development of finding a solution to the dollar problem, for the main source of crawler tractors in America. Several major concerns are at present examining the possibility of building them locally.

To find out Australia's true position in regard to steel, a basic commodity in our national development projects, 2,000 interviews were conducted by the Division with users of steel products.

Only then was an assessment made of the capacity of the Australian steel industry to meet the demands of the next few years. The conclusion reached was that the present Australian demand for steel products, estimated at 2.33 million tons a year, was about one million tons in excess of production and about 750,000 tons in excess of existing capacity.

It became clear, even before the survey was completed, that Australia must look for new supplies of steel if projected developmental works were not to be delayed. The Commonwealth Government decided to import steel for its own use, and to leave local supplies, as far as possible to other users. Indications at present are that given the highest possible output of coal, we shall still have to import steel for the next five years.

Industries contemplating expansion, and overseas concerns planning to launch out in Australia, will profit from study of the Division's reviews. Possibly those engaged in the industries covered will see the reviews as the ready-made bases of research they may consider it profitable to maintain themselves within those industries.

Inspection Aids Production

(Continued from page 48.)

machine, a centre lathe, or semi-automatic lathe, and so on.

The feed gauge is connected to the usual air controller, mounted on or near the machine tool where it is most conveniently seen. The gauge consists of a comparator unit and an adjustable stop, as shown in the diagram. The gauge measures the movement of the wheel-head or tool-post slides, and consequently allows the machining of the part to the required size, without hit-and-miss methods being used for the finishing cuts. On production it allows the results found after machining one part to be used in machining the next part correctly. It shows up any defects in the

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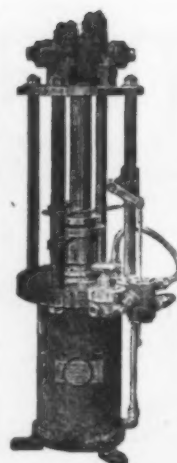


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machine, chucking, centres, wheel spindles, and so on, which might make it impossible to produce to the required limits.

On production work the feed gauge can be used to achieve increased precision, and a higher rate of production. It facilitates setting and control of the machine, and eliminates rejects when using unskilled labour.

CONTROLLING SLIDE MOVEMENT.

The comparator unit is bolted to the wheel or workhead slide, and the adjustable stop to the base of the machine. On setting the stop against the stem of the comparator unit, the extent of any movement of the slides, either by operation of the hand-feed wheel or by accidental movement, is at once shown on the manometer column. Other applications of the feed gauge are as a depth stop for boring, for the exact location of holes on milling or jig-boring machines, as an extensometer for recording the pressure of rolling mills, and so on.

When adjustment of the cut is made on the tool head itself (on "tool rotating" machines) a tool setting gauge shown diagrammatically on page 54, is employed. This simple device consists of an adapter A, which is fitted to the toolhead, as shown. The adapter carries a comparator unit C, whose stem is in contact with the tool bit B, and indicates the movements of the bit.

At the beginning of the machining run, the first part is measured before reaching size. The tool setting gauge is fixed in position, and the difference between the size measured and the size required is then clearly shown on the air controller when the tool bit is adjusted. Compensation for tool wear, and a measure of the dispersion are given in this

way during the run by measurement of succeeding parts.

Air operated gauges are particularly suitable for high precision measurement. The possibility of obtaining high magnifications without employing mechanical or other relays, the lack of complication and weight of the comparator units, and the possibility of obtaining alternative magnifications without embodying any auxiliary devices, makes it possible to evolve highly accurate instruments of this type.

Internal diameters or gaps can be measured to a high order of accuracy, in the normal cases where bores are machined square to faces, using an internal comparator as shown on page 44. The accuracy of these readings given by a typical comparator unit is better than 0.00002 in., and two measuring ranges of 0.0015 in. and 0.0085 in. are available by changing control jet and scale. Capacity is 0.2 in. to 6 in.

The internal comparator is simple and light, and can be taken to the part, in the case of heavy components, or to the machine.

Three bodies are used to cover full capacity, and the largest, 1 in. to 6 in., is also applied in the comparator plug gauge, in accordance with the principle of standard gauging elements. The instrument can be speedily set, when using slips in a vice, and it is also simple in construction.

VERTICAL COMPARATOR.

A vertical comparator is also described by Mr. Richards, which features high magnification, stability and repeatability. The light weight of the comparator unit places no great strain on the arm of the comparator. Although accuracy under proper conditions of temperature and cleanliness, is of the order of 0.000005 in. for a measuring range of 0.001 in., a change of control jet and scale gives a

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A good deal of extensometry demands a much shorter base length. This is so on some curved surfaces, or similarly on surfaces where deformations will be localized. An extensometer has been designed on a 2 mm. base length, and can be used in relatively confined spaces. Magnification is normally $\times 200,000$.

Certain industries use parts which serve as controllers or limiters of flow (jets, injectors, needle valves, and so on). The flow in such cases does not depend exactly on the geometric dimensions of the orifice in question, and in any event it is not possible to measure these dimensions with sufficient accuracy. In the same way, in the case of assemblies of parts it may be necessary to know the value of an "escape" which has no geometric dimension.

Air-operated flowmeters measure directly, normally giving readings in cubic centimeters of benzole per minute under a 500 mm. head of the flow or "escape" in question. This measurement is made very simply using the restrictive principle as described earlier.

A special application of air-operated equipment is a spherometer for the accurate checking of such products as lenses, whether concave or convex, particularly on the machine during production. This instrument measures by means of a circular listel, or rim, the variations of an abscissa with great accuracy, and allows the detection of any local defects where they exist. It gives a direct reading of the radius of curvature. Listels are available with diameters of 10, 20 and 40 mm.

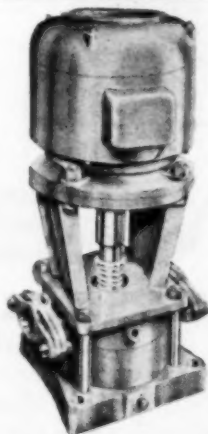
Other applications of air-operated equipment are in surface finish gauges and in jet cee gauges for the continuous measurement of thickness of strip or sheet, generally with an air-operated limit switch and signalling device, the strip being passed between two opposed jets. In the inverse sense, jet slip gauges can be used to check gaps or groove widths. Wire yarn, and similar diameter or thickness measurements are easily made by passing the material through two jets in series and measuring the escape of air allowed through the jets by the thickness of the material. Built-in air-operated automatic sizing devices are used on grinding machines; a tool-post dynamometer incorporating a comparator head allows determination of optimum speeds and feeds, tool rake, and so on, on lathes. Such problems as average diameter gauges for deformable parts, triangular lobing checks with vee gauges, bore-to-face squareness gauges, centre distance gauges, concentricity gauges, straightness and alignment gauges, can be simply solved.

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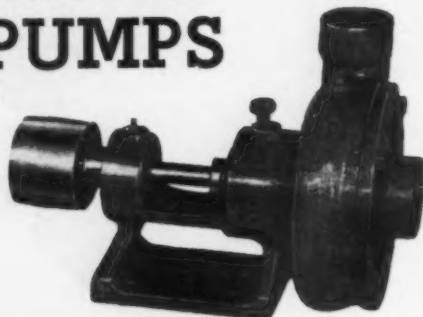
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Fischer and Porter Co., Manufacturers Flow Meters.

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Gray, O. E., Cabinet Maker and Joiner.

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Raymond Hydraulic Transmission Co., Hydraulic Power Transmission Engineers.

Reynolds, A. P., and Son, Furniture Manufacturers.

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Wallace and Luke, Eagle Foundry, Ironfoundry.

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and general engineer.

Brock & Norman Ltd., 15

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Colonel Light Bakery Ltd., 210

Goodwood Road, Colonel Light

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Controllite Limited, 18 Chesser

Street, Adelaide. Lighting speci-

alists.

J. Flinn "Barossa Knitting Mill,"

Kapunda, Knitwear.

Gold Seal Products, 1a Kent

Terrace, Kent Town. Biscuit

manufacturing.

W. A. S. Jolly, Cannon Street,

Adelaide. General engineer.

K. F. Productions, 27 Wilsden

Street, Walkerville. Works: 45

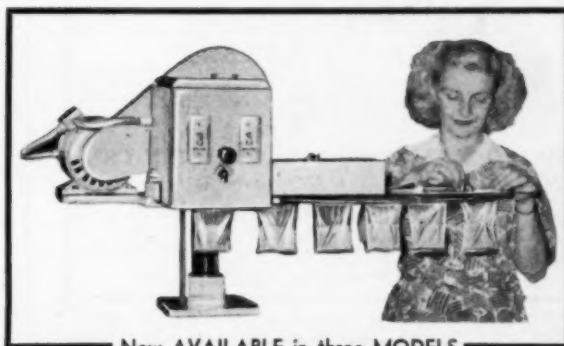
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(Turn to page 62.)

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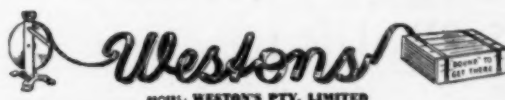
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(Continued from page 60.)

Ladda Ltd., 18 Harrow Road, St. Peters. Aerated waters manufacturers.

R. G. Proleta, 15 Park Avenue, Cheltenham Gardens. Builder and contractor.

South Road Joinery Work. South Road. Edwardstown. Joinery.

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C.M.A. ANNOUNCE PRICES UP 15 PER CENT.

Cable Makers (Australia) Pty. Ltd. announces that the Trade List prices of all C.M.A. Wires, Cables and Flexibles have been increased by 15 per cent. as from October 11th. An adjustment of the current surcharges, however, leaves the manufacturers in the same financial position as previously, the main difference being that the money margin of distributors and wholesalers will be increased by 15 per cent. as from the date of the price increase.

In making this announcement, Cable Makers (Australia) Pty. Ltd. advise, for the information of the trade, that raw materials and labour costs have increased since 1942 as follows:—Copper wire by

116 per cent., calico by 174 per cent., cotton by 136 per cent., rubber by 255 per cent., lead by 273 per cent., tin by 115 per cent., labour costs by 60 per cent.

During the same period, the prices of C.M.A. cables and wires increased by only 43 per cent. In its announcement, Cable Makers (Australia) Pty. Ltd. indicated that the above raw materials represented 90 per cent. of the total material used in manufacture, but that the Company had been able to absorb a very high proportion of these increased costs by means of its policy of continual expansion, and more particularly by improved internal efficiency, principally through the highly successful C.M.A. Bonus Incentive Scheme.

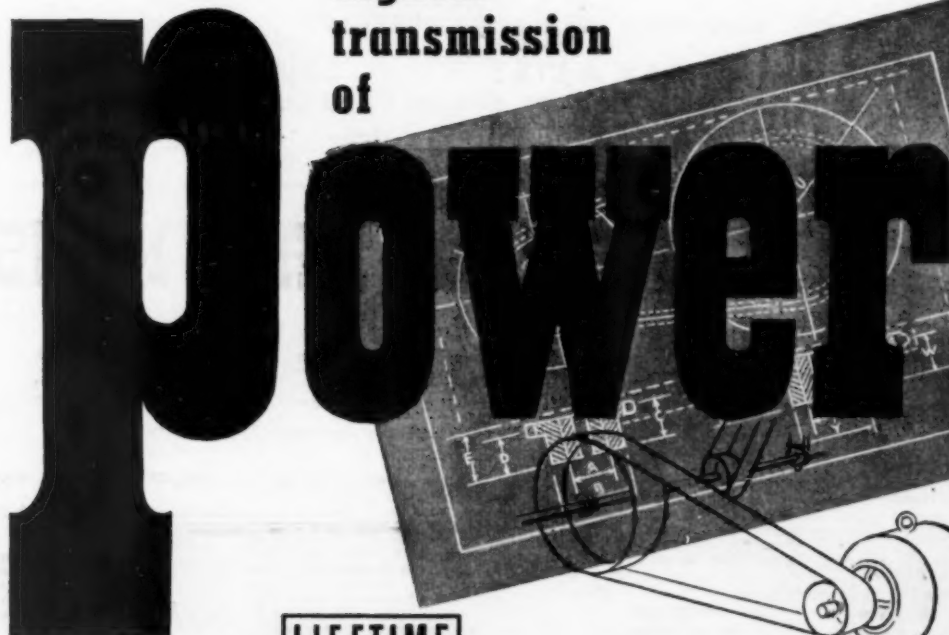
PROGRESS BY KNITTING MILLS.

The Chairman of Australian Knitting Mills Ltd., Mr. G. Robinson, said at the Company's recent annual meeting that considerable progress had been made with the installation of new plant and erection of new buildings. A new product—men's half hose—was now on the market in limited quantities, while additional plant had been installed for the manufacture of nylon and pure silk full-fashioned hosiery. Further plant was on order and should be received during the current financial year.

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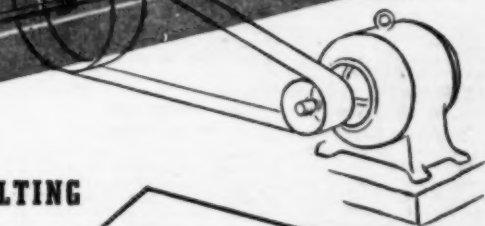
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PATENT & TRADE MARK NEWS

Complete specifications lodged with the Patents Office are open to public inspection almost immediately after their lodgment. Interested persons are now able to obtain the details of an invention for which protection is being sought.

Provision is also made (Patents Act, 1948) for an applicant to obtain damages, if infringement occurs, from the date of publication of the application. A rule of practice has been established whereby an application will be examined more speedily when a prima facie case of alleged infringement is proved.

Particulars of the necessary procedure will be supplied by any Patent Attorney practising in the Commonwealth.

PATENT SPECIFICATIONS ACCEPTED

MOULDING CONCRETE BLOCKS.

158,224.—W. H. Thompson.

Claim 1. Moulding means for use in the making of concrete blocks, fencing posts and the like, in which outer end plate members and outer side plate members are assembled and fastened together to rest edge on upon a moulding surface to form an open top rectangular enclosure and a number of divisional plate members are disposed edgewise vertically to extend across the enclosure and are so formed that they may be positioned and fitted between two of the outer members to provide a number of moulding divisions of the mould, characterized in that each of the said divisional plates is formed with bends suitably of semi-circular cross section in its length disposed a distance apart in such length and extending throughout the full depth of the plate, and in that a core piece is provided to

be positioned upon the inner surface of each said side member by sliding edgewise along upon such surface to extend lengthwise therewith and such core member is made of convex form upon its inner side.

WOOD BIT.

158,216.—A. Mercer.

Claim 1. A bit having a shank of round cross-section in which is formed a longitudinal groove; the lower end of the shank being formed obliquely to the axis of the shank in such manner that the lowermost part of the shank, or boring point, is near to one side edge of the said groove.

ELECTRIC FILAMENT LAMPS.

158,221.—P. E. Cosgrave.

Claim 1. An improved electric incandescent lamp of the known type comprising a plurality of filaments and means for selectively connecting any one of such filaments to a source of electric supply; wherein the means for selectively connecting any one of the said plurality of filaments to a source of electric supply include (a) a plurality of pairs of lead-in wires in the lamp (as one pair of lead-in wires for each filament)

with associated contact members and (b) a flange-like or bead-like projection on the metal portion of the base of the lamp, said flange-like or bead-like portion having circumferentially formed diametrically oppositely disposed pairs of recesses or cut-away portions which are adapted to be selectively engaged by corresponding adjacently disposed pairs of tooth-like projections extending from the lower circumferential edge of a metal band which is slidably and rotatably fitted over the said base of the lamp and is furnished with a pair of diametrically oppositely disposed radial holding pins.

ELECTRICAL SOUND RECORD- ING OR REPRODUCING HEAD.

158,222.—V. F. Harris.

Claim 1. An electrical sound recording or reproducing head or the like, in which a spring of magnetic material is affixed to the armature centrally thereof so that the armature will move with torsion of the said spring whereby the said spring will serve to hold and return the armature to predetermined position for operation of the stylus carried thereby, the said spring at its opposite ends being also secured to a support.

POWER-OPERATED DRAG SAW.

158,226.—H. J. Dennis and W. C. Dennis.

Claim 1. Improvements in a power-operated drag saw comprising a manually operated worm; a worm wheel that can be turned thereby; a bearing connected thereto; a driving shaft supported in the bearing and a housing for a driving worm wheel connected to the bearing, thereby enabling the drag saw which is associated with the driving worm housing to be turned as required.

Claim 2. In a power-operated drag saw as set out in Claim 1, the characterisation that a pole is pivoted and capable of being moved and held in various angular positions relative to the rest of the unit, thereby enabling the saw to be maintained in parallelism with the ground.

SAW BENCH FOR BOARDS.

158,227.—A. F. Hambley.

Claim 1. Machine for sawing boards from billets consisting of a reciprocable billet carrier and means to reciprocate it, said billet carrier having means adapted to be actuated by the movement of

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LAMINATED WOODEN STRUCTURES.

138,229.—R. Symonds.

Claim 1. An improved method of producing arched laminated structures from sheets of wood, such method being characterized as follows:—that a plurality of similarly cut and formed pieces of wood to form the laminations of a said structure are arranged substantially face to face but initially with alternate pieces supported with their upper edges higher than that horizontal plane which represents the height at which the other or intermediate pieces are supported, there being intermediate layers of glue or adhesive between the said plurality of pieces and the said higher pieces being temporarily supported in their said initial higher arrangement upon a plurality of assembling devices each of which latter is partially rotatably fitted so that following upon partial rotation of the said assembling devices and

consequential removal of supporting elements which supported in their higher positions the said higher pieces of wood the latter gravitate or are forced downwardly so that their edges lie flush with and are supported upon the supports for and with edges of the other wood pieces and so that adjacently disposed faces of all of the plurality of pieces of wood are in contiguous relationship and disposed between two bending elements which latter are disposed in substantially parallel arrangement with one another and are arranged according to the nature of the arch required for the finished structure; one said bending element being fixed and the other one being or including an inflatable and deflatable element which is associated with a compressed air supply and suitable controls therefor and by which the requisite transverse pressure for forming a said arched laminated structure is applied.

Claim 3. Means for carrying out the method as claimed in Claim 1 such means including each as supporting means for a plurality of the said pieces of wood, a plurality of assembling devices each of which latter is in the form of a partially rotatable rod fitted to a horizontally disposed portion of a suitable framework each said rod having a plurality of assembling arms of

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equal length and thickness (their said thicknesses being considered in relation to the longitudinal direction of their respective rod) such assembling arms being set at right angles to the axial line of the said rod and being so spaced apart that alternately disposed spacings are equal but adjacently disposed spacings are unequal, each smaller spacing being lesser than is each larger spacing by a distance which is equivalent to that distance which is represented by twice the said thickness of a said assembling arm.

TENDERS FOR PATENTS

ROTARY PRINTING PRESSES.

NOTICE is hereby given that the owner of the undermentioned patents is desirous of disposing of its rights in the inventions by way of licence or otherwise:—

118,171 and 125,363.

Further particulars will be supplied on application to

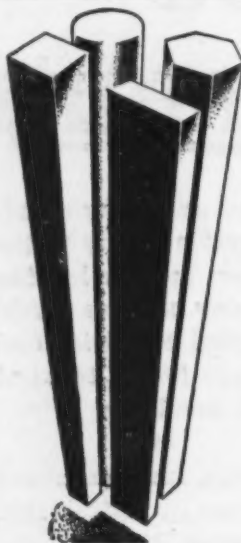
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TRADE MARK APPLICATIONS

94,613. A design showing, inter alia, the word "Griptile." Plastic tiles.—Gordon Walker Kesson, 7 Toledo Flats, Stuart Street, Manly, N.S.W.

96,997. "Tasman." Fireworks and cartridges.—Tallerman & Co. Pty. Limited, 60-62 York Street, Sydney, N.S.W.

93,168. "Carlisle." Cotton thread.—The American Thread Company, 280 West Broadway, N.Y., New York, U.S.A.

95,444. "Arrowcraft." Clothes pegs.—Australian Peg Manufacturers Pty. Limited, c/o Charles J. Berg, 58 Pitt Street, Sydney, N.S.W.

97,106. "Banda." Paper, stationery and bookbinding.—Block & Anderson Limited, 58-60 Kensington Church Street, London, W., England.

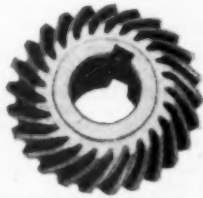
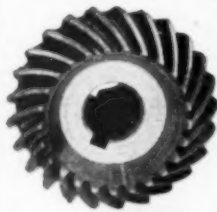
INCREASE IN AUSTRALIAN NATIONAL INCOME.

Australia's national annual income—the total income of all people, companies, and public authorities in Australia in one year—rose to £2,265 million in 1949-50, which is approximately three times the pre-war level. Obviously, higher prices account for much of the rise. Nevertheless, a substantial increase in the number of workers and good farm seasons over the past three years have been important contributing factors. Outstanding features of the post-war movements have been the increases in capital investments and in imports.

MR. A. N. WESTON WELCOMED HOME FROM OVERSEA VISIT.

Mr. A. N. Weston, founder of Westons Pty. Ltd., Macquarie Place, Sydney, was entertained at a very pleasant function organised by his staff last month on the day he returned home from a business visit to other parts of the world. Making his fourth trip abroad since he came to settle in this country, Mr. Weston visited the United Kingdom, France, Germany, Switzerland and Denmark inspecting goods and materials handling methods and equipment and packing room supplies in all important centres. He renewed personal contact with his company's many overseas principals and negotiated new and important agencies for his organisation in Australia. Among the many (Turn to page 68.)

HAVING TROUBLE WITH BEVEL GEARS? THEN CHANGE TO **SPIRAL BEVELS**



Only *SPIRALS* have these advantages:

- As many as 5 teeth always in mesh, giving smooth, quiet action, and also
- reduces working load on teeth.
- Localised tooth bearing, allowing greater tolerance in assembly.
- Curved teeth keep lubricants between mating surfaces.
- The 20° long-addendum tooth form prevents interference when the pinion has as few as 6 teeth.

Capacity for SPUR and CLUSTER GEARS to 8in. diam. done by the FELLOWS METHOD.

REMEMBER! These gears actually **COST NO MORE** than straight bevels.

RANGE: $\frac{1}{4}$ in. to 3 $\frac{1}{2}$ in. diam. 12 D.P. to 50 D.P. 12-teeth pinions to 100-teeth crown wheels.

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THIS VALUABLE REFERENCE BOOK

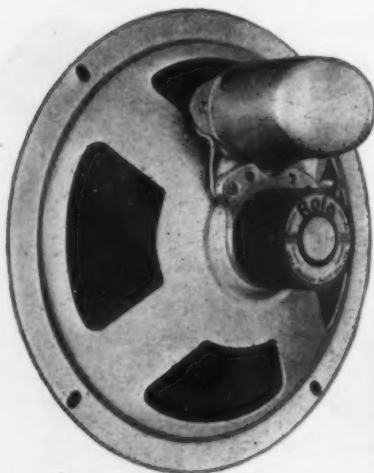
Full of typical installations of Timken tapered-roller bearings in typical machines, this booklet has been found useful by many designers.

BRITISH TIMKEN LTD., Doston, Northampton and Birmingham 7, England. (Subsidiary Company: Fischer Bearings Co. Ltd., Wolverhampton, England.)

AUSTRALASIAN INDUSTRIAL DISTRIBUTORS:

MELBOURNE, Victoria: Bearing Service Co. of Aust. Pty. Ltd., 222 Queen Street, P.O. Box 2371. SYDNEY, New South Wales: Bearing Service Co. of Aust. Pty. Ltd., 28 Wentworth Avenue. BRISBANE, Queensland: Bearing Service Co. of Aust. Pty. Ltd., 329-331 Adelaide Street, Box 2350, G.P.O. ADELAIDE, South Australia: Bearing Service Co. of Australia Pty. Ltd., 96 Grote Street. PERTH, Western Australia: Bearing Service Co. of Australia Pty. Ltd., 856 Hay Street. NEW ZEALAND: Jas. J. Niven & Co. Ltd., 65-71 Taranaki Street, P.O. Box 1998, Wellington.

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☆ ROLA Magnet Winding Wire

This year the Rola Magnet Winding Wire plant celebrates its 10th birthday and the passing of the 12,000,000 pounds milestone in the production of the highest quality enamel and fabric covered wires for the radio and electrical industries.

☆ ROLA Magnet Alloys

The research of skilled physicists is allied with practical engineering know-how and the latest production techniques to develop the range of Rola permanent magnet alloys which find such widespread use in industry.

ROLA CO. (AUST.) PTY. LTD.

The Boulevard, Richmond, Victoria; and 116 Clarence Street, Sydney

(Continued from page 66.)

guests at Weston House to welcome him home were Mr. W. Evans, of Western Assurance Co.; Mr. Harris, of Pennys; Mr. H. Hay, of Standard Gummed Tape Co. Pty. Ltd.; Mr. F. Ruwald, of F. J. Ruwald & Co.; Mr. G. Sealy, of Macquarie Place Garage; Mr. J. Linfield, of Woolworths Ltd.; Mr. J. Plater, of Australian Durex Products Pty. Ltd.; Mr. G. Truscott, of G. Truscott & Sons Pty. Ltd.; Mr. Field, of B.H.P. Co. Ltd.; Mr. Chambers, of McCallums; Mr. Lance, of H. S. Bird & Co. Pty. Ltd.; Mr. V. Bennett, of Precision Engineering Co. Pty. Ltd.; Mr. Hain, of Riteway Materials Handling; Mr. N. Bransby, of Art Weld Co.; Mr. W. Hogarth, of Harrisons, Ramsay Pty. Ltd.; Mr. W. Abberton, of Hawkins and Abberton Pty. Ltd.; Mr. D. Stephens, of F. H. Stephens Ltd.; Mr. J. O'Brien, of J. O'Brien & Co.; Mr. Ruhen, of Sun Newspapers; Mr. Nolan, of the Joint Coal Board; Mr. D. Howard, of John Dewar & Sons; Mr. Ramsay, of Ramsays Pharmacy; and Dr. Raymond, of North Sydney.

FIRST POWER TRANSFORMERS MANUFACTURED IN QUEENSLAND.

The first power transformers to be completely manufactured in Queensland were recently produced at the new Redbank Works of Australian General Electric Pty. Ltd.

Demand for power transformers for the reticulation of electricity throughout Queensland has been on a heavy scale, and the production of this class of equipment was well in mind when the decision was made by A.G.E. to commence manufacturing in the Northern State.

Ordered by the City Electric Light Co. Ltd., the three transformers are tangible proof of the team work which has characterized events at Redbank since the project was launched.

Following the decision to establish a new factory, the selection of a suitable site became the responsibility of Mr. S. E. Barratt, A.G.E. Works Director, and Redbank was finally chosen.

Installation of plant and equipment was supervised by Mr. C. C. Ellice, of A.G.E. Auburn Works, who handled the difficult problem of turning an empty and isolated building into a smooth running establishment in the minimum of time.

Finally, under the supervision of Mr. R. L. Burns, Acting Works Manager at Redbank, the first transformers, completely manufactured in Queensland, were delivered on August 28th, 1950. These were preceded, however, by a small number of units, partly manufactured in the A.G.E. factory at Richmond, Victoria, which were completed at Redbank on July 5th, 1950—three months after the factory was established.

It is felt that the accomplishment of this task in such a short time augurs well for the future of the A.G.E. Redbank Works and for Queensland's secondary industries in general.

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SAVE YOURSELVES
TROUBLE BY USING



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CONFERENCE OF OLYMPIC CABLES DISTRIBUTORS.

Olympic Cables distributors from all States attended a Conference with representatives of Olympic Cables Ltd. at the Hotel Australia, Melbourne, early last month.

Conference chairman was Mr. C. S. Grainger, Technical Director and Vice-chairman of Olympic Cables Ltd.

In his opening address to welcome the delegates, the chairman of directors of Olympic Cables Ltd. (Sir Frank Beaurepaire), described the growth of the Olympic organisation in the three years that had elapsed since the last Conference. In that time, the number of hands employed at the Footscray factory and office had risen from 470 to 730, and production had increased by approximately 120 per cent.

Sir Frank said that plans at present in hand to more than double the capacity of electric power generating installations in Australia by 1958, and the steady expansion of industry and housing would continually increase the demand for cables in Australia.

Delegates were entertained at a buffet luncheon, and a dinner at the Australia by the Directors of Olympic Cables Ltd.

On the following day they visited the cable factory at Footscray.

CELEBRATION FOR 10-YEAR SERVICE.

On Friday, 13th October, Australian Abrasives Pty. Ltd. gave a dinner at "Jonroe" (Amory), Ashfield, N.S.W., to 35 employees who had completed 10 years' service with the Company.

During the evening, Managing Director Roy Miller presented each employee with a 10-Year Service Badge, also a 10-Year Service Certificate signed by the Directors.

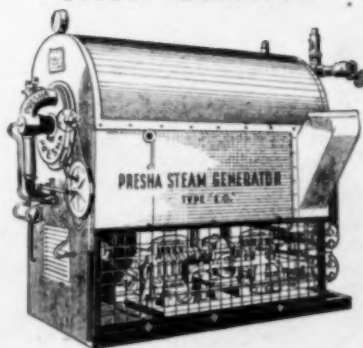
"In these times of rapid labour turnover," said Mr. Miller, "it is gratifying for the Company to still have such a high percentage of 'old' employees. This indicates what a modern plant, good working conditions and amenities, and a friendly open-door policy can do towards promoting harmonious employer-employee relations."

WARNING ON TARIFF CUTS AND REVALUATION.

Mr. R. B. Davies, chairman, R. B. Davies Industries Ltd., struck a warning note on tariff reductions and currency revaluation when addressing shareholders at the recent annual meeting. "Reductions of tariffs and currency revaluation together," he said, "would have serious effects on industry. The supply of goods in Europe is improving and European exports to Australia might easily rise to £100 million annually above the level of the last few years. Such an increase would rapidly deplete Australia's overseas funds and cause difficulties like those of the 1920's."

THE MOST MODERN — ECONOMICAL — EFFICIENT —
RELIABLE STEAM GENERATING PLANT. FOLLOW THE
EXAMPLE OF HUNDREDS OF OTHER STEAM USERS,
INSTALL A

"Presha" Automatically Controlled Steam Generator



THE "PRESHA"
(Automatically Controlled Steam Generator)

This original and only "PRESHA" — covered by world patents, hundreds in constant use in Australia and overseas. Large and small steam users, your steam requirements of any capacity supplied — fitted with the "PRESHA," patent automatically controlled modulating fuel oil burner using diesel or bunker fuel oil — a full head of steam in five minutes — efficiency guaranteed 80% — entirely automatic in operation — unlike a steam boiler, there is no danger risk — a "PRESHA" steam generator cannot explode — entirely an Australian invention made in Australia by Australian engineers using all Australian materials and equipment.

Write at once for Illustrated Brochure.

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BOVRIL LIMITED, England, 8-100 H.P. Generators, total 800 H.P., for their new works on the Katherine River, North Australia.
THE COMMONWEALTH WHALING COMMISSION, 4-100 H.P. Generators, total 400 H.P., for the Whaling Station, Carnarvon, Western Australia.
THE NATIONAL UNIVERSITY, CANBERRA, 4 Generators.
NUFFIELD ORGANISATION, SYDNEY, 4 Generators.

Ask for a list of users. Get their opinion, there is no better recommendation. "PRESHA" Steam Generators are manufactured by

PRESHA ENGINEERING CO. PROPRIETARY LIMITED

In their factories in each State of the Commonwealth:

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The Derwent Thermal Overload Cut-out is a heat protection device designed to protect A.C. Single Phase motors against overload burn-outs.

Immediately the load exceeds the safe limit, the "Derwent" cut-out automatically operates, cutting out the motor and saving it from damage. The cut-out is manually reset by simply pressing the "reset button." Maximum temperature attained by switch at 400% overload, is approximately equal to a locked rotor current of 900 deg. C.

Available from all electrical wholesalers in various sizes up to 5.1 amp. switch rating.

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Victorian Rep.: A. E. Ackland Pty. Ltd., 406-414 P.O. Pl., Melb

ACCEPTED TENDERS

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Powder, Parco, in 250-lb. kegs (A/R. No. 1455). Parkerizing-Bonderizing Rustproof Ltd., £308/6/8.

Miscellaneous Hardware (A/R. No. 1459). A. Mantova Pty. Ltd., £112; Eastway Wireworks Pty. Ltd., £484.

Shirts, Khaki (A/R. No. 1460). Edwards, Upton Pty. Ltd., £246/6/4.

Gargoyles, D.T.E. Oil (A/R. No. 1461). Vacuum Oil Co. Pty. Ltd., £1,595/2/8.

Sugar (A/R. No. 1462). Colonial Sugar Refining Co. Ltd., £1,938/6/-.

Dribarm (A/R. No. 1463). Mauri Bros. & Thompson Ltd., £225.

Powdered Milk (A/R. No. 1464). Prod. Co-op. Dist. Soc. Ltd., £1,504/8/6.

Brushes, Lavatory (A/R. No. 1465). Briscoe & Co. Ltd., £213/5/8.

Brooms, Scrubbers (A/R. No. 1465). The Federal Broom Co. Pty. Ltd., £1,500.

Broom Heads, Brushes, Bannister (A/R. No. 1465). Jones & Joseph Ltd., £700/1/11.

Broom Heads, Brushes (A/R. No. 1465). E. Dixon & Co., £311/13/4.

Squares, Calico (A/R. No. 1466). W. E. Bird Pty. Ltd., £223/15/-.

Batteries (A/R. No. 1467). Exide Batteries of Aust. Pty. Ltd., £470.

Water Pipes and Fittings (A/R. No. 1468). Stewarts & Lloyds Pty. Ltd., £353/5/-.

Nails and Tacks (A/R. No. 1469). Sidney Cooke (United Nail) Pty. Ltd., £281/9/2.

Cement (Jointing), (A/R. No. 1470). McKinlay, Fletcher Pty. Ltd., £453/15/-.

Locks, Brass (A/R. No. 1474). Jacksons Lock & Brass Works Pty. Ltd., £287/19/6.

Stockless Anchors, Cable and Gear (A/R. No. 1478). Byrne & Boyle, £4,445.

Sugar (A/R. No. 1479). Colonial Sugar Refining Co. Ltd., £5,587/13/1.

DEPARTMENT OF WORKS AND HOUSING.

Cast Iron Soil Pipes and Fittings, for Canberra (A.C.T.). H. H. J. Wagg, £5,272/17/2.

Gallon Calorifiers (2 x 200). Greenslopes, A. E. Atherton & Sons Pty. Ltd., £643.

Aviation Fuel Pumping Station, at Nowra (N.S.W.). Gilbert & Barker Mfg. Co. (Aust.) Pty. Ltd., £1,609.

Generating Sets (4 x 112 K.W.). R.A.A.F. Station, Momoote, Mitchell & Co. Pty. Ltd., £26,164.

Wood Furniture, Camoowal (D.C.A.). Kennans, £247/5/-.

Telegraph Operating Tables, Roselle, P.M.G. Store, Sydney Engineering & Steel Fabricating Co., £180.

Fork Lift Truck, Melbourne, Queens Bridge Motor & Engineering Co. Pty. Ltd., £1,885.

Heating and Ventilating System, at Instrument Workshop, C.S. & I.R.O., Fishermen's Bend, £575/15/-.

DEPARTMENT OF CIVIL AVIATION.

Self Supporting Steel Towers, 50 ft. (Sch. No. 236). Saunders & Stuart Pty. Ltd., £5,580.

Fire Hose (Sch. No. 279). Australian General Electric Pty. Ltd., £5,747/13/-.

Automatic Voltage Regulators (Sch. No. 288). Australian General Electric Pty. Ltd., £5,747/13/-.

Drawn Steel Rollers, 4-6 ton (Sch. No. 281). Marco Engineering (Aust.) Pty. Ltd., £26,402/10/-.

STORES, SUPPLY AND TENDER BOARD.

Bicycle Lubricating Oil (Sch. No. C.T.B. 887). Vacuum Oil Co. Pty. Ltd., £82.

Floor Oil (Sch. No. C.T.B. 882). Vacuum Oil Co. Pty. Ltd., Rates

Paper, for the P.M.G. Department (Sch. No. C.T.B. 901). Gordon & Gotch (Aust.) Pty. Ltd., £3,704/3/4.

POSTMASTER-GENERAL'S DEPARTMENT.

R.A.X. Equipment, 50/200 type (Sch. No. C.6201). British Automatic Telephone & Electric Pty. Ltd., £99,106/5/4; British General Electric Co. Pty. Ltd., £94,617/2/1;

Standard Telephones & Cables Pty. Ltd., £12,645/10/-.

Steel Spindles (Sch. No. C.6286). Pope Products Ltd., £110,625.

Telegraphists' and Telephonists' Chairs (Sch. No. C.6348). Bendix Steel Industries Pty. Ltd., £3,081/17/9; Bendix Industries (N.S.W.) Pty. Ltd., £2,617; Universal Inventions Pty. Ltd., £464/15/-.

Relays, 3000 type (Sch. No. 50/1352). Thom & Smith Ltd., £2,458/6/8.

Tool Steel (Sch. No. V.351). The Eagle & Globe Steel Co. Ltd., £450/17/2.

Diesel Injector and Fuel Pump Servicing Equipment (Sch. No. Q.102). William Adams & Co. Ltd., £1,224/19/1.

Flash Butt Welder (Sch. No. Q.101). Oerlikon Manufacturing Ltd., £965.

Motor Driven D.C. Welding Machine, with Accessories (Sch. No. Q.101). General Distributors Pty. Ltd., £349.

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DEPARTMENT OF MAIN ROADS.

Hand Operated Calculating Machine, Stott & Underwood Pty. Ltd., £46/0/5.

Screen Silk, Sandusky Overseas Co. Pty. Ltd., £17/2/-.

Corrugated Fibro Sheets, James Hardie & Co. Pty. Ltd., £105.

Fuel Pump, Pyrox Ltd., £55.

(Turn to page 72)



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Available now in
S.A.E. AND WHITWORTH
THREADS.
SIZES FROM $\frac{1}{4}$ in. - 1in.

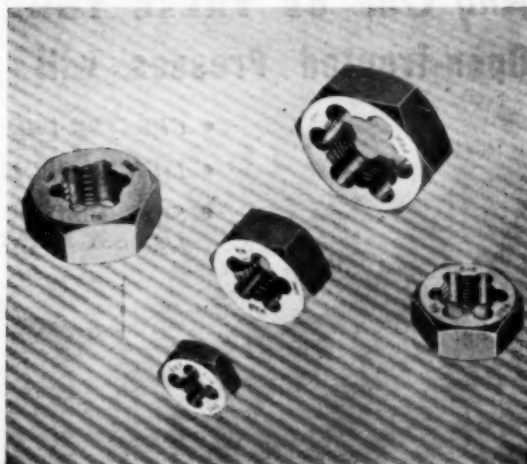
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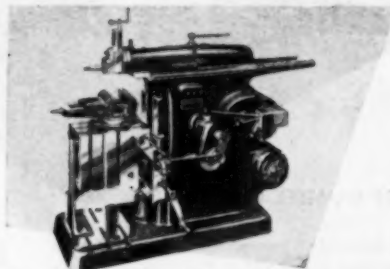
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Helical-cut Bull Wheel; Wide Front and
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cludes Automatic Downfeed and
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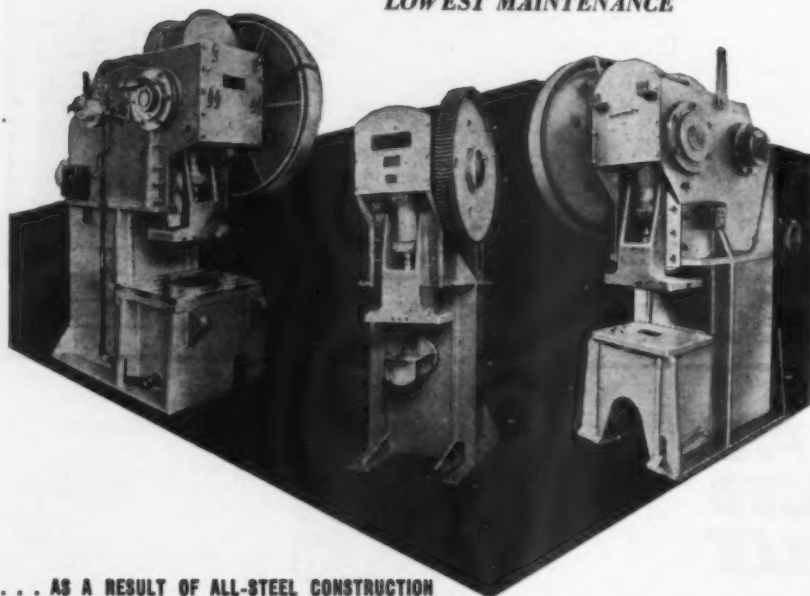
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Size for size, all-steel fabricated presses are more rigid than conventional cast frame types—and rigidity in a press adds up to longer die life, more accurate output and sustained operating. If you are looking for ways to increase your earning power, start with your plant—a change over to all-steel presses will bring production economies plus lowered maintenance.

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Manufacturers of the largest range of
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Left—120 ton all-steel Open-fronted Press.

Centre—75 ton Horn Press.

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Available as Horn and Swinging Table Presses. Good delivery subject to prior sale.

(Continued from page 70.)
SYDNEY COUNTY COUNCIL.
Trailer caravans, two-wheel, 12, £9,930. Caravan Park Ltd.

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X-Ray Contact Therapy Unit, Philips Electrical Industries of A., Ltd., £1,070.

Gas Heating Services, for Lithgow Public School, Australian Radiator Co. Pty. Ltd., £3,314/4/-.

Steam Heating System, for Glen Innes School, Australian Radiator Co. Pty. Ltd., £1,027.

Mortuary Body Cabinet, for Liverpool State Hospital, Chubb's Australian Co. Ltd., £2,090.

Mortuary Cabinet, for Sutherland Hospital, Chubb's Australian Co. Ltd., £990.

Low Pressure Refrigerating Plant, for Sutherland District Hospital, Gordon Bros. Pty. Ltd., £250; £1,350.

Air Conditioning Plant, for Moruya District Hospital, Gordon Bros. Pty. Ltd., £2,165.

Low Pressure Refrigerating Plant, for Crookwell Hospital, Gordon Bros. Pty. Ltd., £535.

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SYDNEY COUNTY COUNCIL. ELECTRICITY UNDERTAKING.

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Concrete Troughs (Sch. 25). Rocla Pipes Ltd. Rates.

Sanitary Paper (Sch. 29). Andrew Jack, Dyson & Co. Pty. Ltd., British Patent Perforated Paper Co. Pty. Ltd. Rates.

Corks, Bungs, etc. (Sch. 33). Cork & Seals Pty. Ltd. Rates.

Metal Lamp Covers (Con. 58313). Stewart J. Mathews Pty. Ltd. Rates.

(Turn to page 75.)

The Truth about 5,300 Human Beings

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With your support and with your co-operation; with the



help of your suggestions and constructive criticisms, the Sydney County Council is confident that it can overcome the electrical problems of all its customers. Your continued co-operation, your suggestions . . . and yes, even your criticisms, are accordingly sought and will be welcomed.

THE SYDNEY COUNTY COUNCIL ELECTRICITY UNDERTAKING

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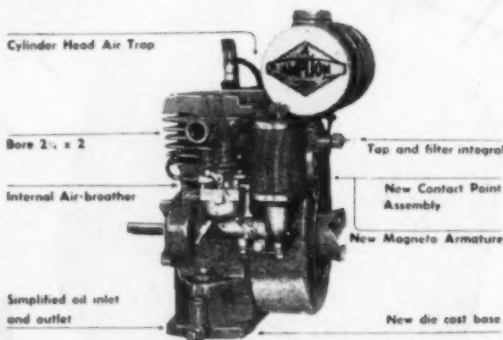
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★ BUILDING PLATES ★ METAL STAMPINGS
★ NAMEPLATES ★ STREET SIGNS

CNR THE BOULEVARDE & THE BROADWAY
PUNCHBOWL, N.S.W.

(Continued from page 72.)

Rail Inspection Cars (Con. 58293). Canada Cycle & Motor Co. (Vic.) Pty. Ltd. Rates.

Traction Motor Armature Laminations and Dies (Con. 58355). Joseph Sankey & Sons (Aust.) Pty. Ltd. Rates.

Road Motor Platform Trucks (Con. 58403). Neal's Motors Pty. Ltd. Rates.

Abrasive Wheel Machines (T. 7722). A & E. McMillan, £49/9/-.

Blotting Paper (T. 7724). T. T. Eadie Pty. Ltd. 35/- ream.

Blotting Paper (T. 7724). Lindrum (A.) Pty. Ltd., £105/2/7½ per ton.

Air Filtering Equipment, for Air Conditioning Plant (T. 7709). Wastinghouse, Rosebery Pty. Ltd., £360.

Linoleum (T. 7712). E. L. Yencken & Co. Ltd., 12 to 30 rolls, 32/- lin. yard.

Insulated Cable (600 volt.), (T. 7718). Gilbert Lodge & Co. Ltd., 200 yds., at £48/10/8—9 core, Jumper and 300 yds., £51/16/2.

DEPARTMENT OF EDUCATION.
Cambridge spot vibration galvo., with built-in transformer, volt. ratio box Cambridge; Cambridge double-weston standard cell; resistances, Cambridge, two, £141. A. E. Supplies Pty. Ltd.

Lathe, Hercules 6 in., with motor drive unit, £450. McPherson's Ltd.

PUBLIC WORKS DEPARTMENT.

Flywire Doors, for Warrnambool. A. R. Greed, £39/10/-.

Insulation, for Dust Extraction System, for Collingwood Tech. School. Bradford Insulation (Vic.) Pty. Ltd., £100.

Equipment, for Ballarat Mental Hospital. Butchers' Service Eng. Co., £240.

Flooring, for MacRobertson Girls' School. Lingnoleo Pty. Ltd., £1,452/10/-.

Window Guards, for Footscray Technical School. Cyclone Co. of Aust. Ltd., £680.

Equipment, for Oakleigh Technical School. H. W. Creek & Sons, £444/15/-.

Sink Heater, for Lilydale. H. G. Johnston, £27.

Telephone System, for Premier's Dept. H. Almus, £85/15/-.

Grille to Cells, for Melb. Police Station. Cyclone Co. of A. Ltd., £27/6/6.



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MDG.1.X.5000

LATE OPEN TENDERS

(Continued from page 89.)

Single Mattress Covers;
Bolts and Nuts; Identification
Plates; White Cotton
Waste; White Cotton Mops;
Dental X-ray Unit. Nov. 14.

Automatic Telegraph Equip.
Nov. 30.

Motor Scythes; Boom Defence
Equipment; Disinfectant, Disinfectant
Paint and Powdered Lime.
Nov. 21.

Radio Plant and Equip. Dec. 19.
Table Fans; Compressed Yeast
for R.E.V. Yard; Jeep Spare
Parts; Aluminium Sheet, Bar and
Tube; 12,548 prs. Khaki Worsted
Socks; Wood Working Machines;

8,424 Clothes Brushes; Aluminium
—Nickel-Iron—Bronze Machining
Bar; Luminous Thimbles. Nov.
16.

Trichlorethylene; Paving Paint;
Transparent Adhesive Tape;
Petrol Resisting Hose Tubing;
Oregon Timber; Manganese
Bronze Propellers; Bread Cutting
Machines; Mattresses. Nov. 17.

(Turn to page 76.)



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Even routine work can deteriorate if lighting conditions are wrong. Production can slip even in the simplest operations; errors and omissions can cause administrative delays and confusion. For many years past, Philips—through their Lighting Service Bureau—have carefully investigated and checked this problem . . . the problem of enhancing efficiency and increasing production through correct illumination. Figures have shown that Philips planned Fluorescent Lighting is decreasing absenteeism, pepping up efficiency as well as improving employee (AND employer) morale.

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LATE OPEN TENDERS—Contd.

NEW SOUTH WALES

GOVERNMENT RAILWAYS DEPARTMENT.

Locomotive, Tender, Carriage and Waggon Axles (Sch. 133), for a period of 12 months. Extended to Nov. 15.

Piston Rings, for Omnibuses, for a period of 12 months. Nov. 15.

Portable Petrol Driven Diaphragm Pump; approx 400 G.P.H. at 10 ft. (CE-2353); Portable

Electrically Driven Diaphragm Pumps; approx 4,000 G.P.H. at 10 ft. lift (CE-2354). Nov. 14.

Riveted Steel Through Girder Railway Bridges—3 80 ft. Span (Spec. 515). Nov. 22.

Rolled Steel Locomotive Tender, Carriage and Waggon Tyres (Sch. 131), for a period of 12 months. Extended to Nov. 15.

DEPARTMENT OF PUBLIC WORKS.

Cable—Asbestos Covered Braided, 23,0076 3 Core (525), Scot

Blower Element Hanger, (527), M.S. Chimney Stack (529), Sterilising

Equipment—Steam Heated (554), Tan Bark (10 cubic yards), (556),

Bars, Sheet, Piling (557), Portable Sucker Unit (558), Hand

Shears (559), Nut—No—Stick (562), Clinker Ashes (563), X-Ray

Cassettes—Reconditioning (654), Bolts and Nuts (565), Hook—Crane

(566), Steel Lockers (567), Therapy Treatment Table (568), Cable

Switchboard (569), Gas Fire (574), Forge Blower, Swage Blocks (575),

Nuts, Stems, Clamps—Air Hose (576). Nov. 17.

Clamps (545). Nov. 29.

Echo Sounding Equipment (577). Nov. 24.

Exhaust Fan (546). Nov. 22.

Galvanised Water Piping (578). Nov. 22.

Filtration Plant—600 G.P.H. (548). Dec. 1.

Lightning Arresters (448). Extended to Nov. 29.

Sink and Drainer, S.S. (533), Sink and Drainer, S.S. (534),

Fencing—Hardwood Paling (535), Wrought Iron Gates (536), Channels, M.S. (537), Flats, M.S. (538),

Spur Wheel, C.S. (539), Propeller-type Fans (540), Felt-Bituminous

Floor (544), Sinks and Drainers, S.S. 548), Asbestos Cement Roof

Sheeting (549), Flue M.S. (550), Tractor—Pneumatic Tyred (551),

Tool and Cutter Grinding (552), Machine Sterilisers, Utensil (553),

Inter-Telephone System (556), Mild Steel Plate (560), Reinforced

Bars, M.S. (561), Alarm, L.P. Steam (581). Nov. 15.

Structural Steel (579). Dec. 1.

Structural Steel (580). Dec. 1.

SYDNEY COUNTY COUNCIL.

Light Fuel Oil, for a period of 6 months. Nov. 17.

Mercury Electric Discharge Lamps (1,100). Nov. 11.

Turbine Blading, for Bunnerong "A" Power Station (Spec. 1490). Dec. 7.

SYDNEY MUNICIPAL COUNCIL.

Steel Clothes Lockers (72 in. x 18 in. x 12 in. Nov. 15.

MISCELLANEOUS.

Diesel or Kerosene Powered Unit Mobile Cranes, for Snowy Mountain Hydro-Electricity Authority. Nov. 20.

(Turn to page 77.)



POWER! Whenever you want it

If power is your problem, we have the answer. The M.V. 2 1/4 and 3 h.p. Petrol and Petrol-Kerosene Engines are rugged, long-lasting units, which will solve your power worries economically and efficiently. They are single-cylinder, four-stroke engines, totally enclosed to protect all working parts from dust and grit. Available with either tank or hopper cooling.

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LATE OPEN TENDERS—Contd.

VICTORIA

MELBOURNE AND METRO- POLITAN TRAMWAYS BOARD.

Electrical Insulating Material (Sch. 51); Electrical Fittings and Sundries (Sch. 52); Electric Lamps (Sch. 53); Electric Wires, Cables and Flexible Cords (Sch. 56); Wires and Wirework Sundries (Sch. 57); Steel Wire Strand Rope and Fittings, Link and Roller Chain (Sch. 58); Batteries and Spares—Lead Acid Type (Sch. 74); Rail Bonds (Sch. 75); Welding Rods, Electrodes and Thermit Welding Materials (Sch. 76); Track Fastenings, etc. (Sch. 89); Mild Steel Plate Sheet, Hoop Tinned Plates (Sch. 84); Steel Reinforcement (Sch. 94); Cement, Lime, etc. (Sch. 90); Industrial Gases (Sch. 91); Frames and Covers—Cast Iron and Steel (Sch. 92); Mild Steel Bar, Flat, Rounds, Squares, etc. (Sch. 108); Plywood Building Sheets (Sch. 113); Bitumen Emulsion, Pitch, Tar, Creosote and Bituminous Materials, etc. (Sch. 114); Castings, Iron and Steel (Sch. 150). Supply of, for a period of 12 months. Nov. 20.

MISCELLANEOUS.

Quarry Dumper Mechanism—Assembled and mounted on chassis provided. To suit existing skips; 60 H.P. Electric Motor—5-Phase, 460 Volt., complete with starter; Tipping Truck—5 yard capacity, all steel body with hydraulic hoist; 600 Gallon capacity Bitumen Bolders—Auto mounted trailer type and fitted with oil flow; Emulsion Spray—45 Gallon capacity trailer type, with engine and compressor and spray bar;

Power Grader—30-40 H.P., 10 ft. blade; Front End Loader—27-30 H.P., Pneumatic Tyred; Concrete Mixer—Pneumatic Tyred, Trailer type, 1 Bag capacity; Grubbing Machine—Manually operated, with approximately 12 ton pull capacity; Mower—Drawn type, 5 Gang assembly, for the Shire of Frankston and Hastings. Nov. 24.

QUEENSLAND

BRISBANE CITY COUNCIL.

Porcelain Insulators and Hardware (Con. E.25/1950). Jan. 12. Trolley Wire, 125, 20 M. Nov. 17.

DEPARTMENT OF PUBLIC WORKS.

Refrigerating Plant, for Cold Room at H.M. Prison, Stone River. Nov. 22.

MISCELLANEOUS.

Quarry Plant, for City of Ipswich. Dec. 1.

NEW ZEALAND

MINISTRY OF WORKS.

Cableways, radial, span 1,200 ft., continuous load 7 1/2 tons, for accurate placing of concrete, etc., Whakamaru, two. Nov. 28.

Double drum steam winch; 5-ton single acting steam piling hammer; steam boiler; 3 in. metallic steam hose. Pars., also Auckland, Christchurch, Dunedin. Dec. 5.

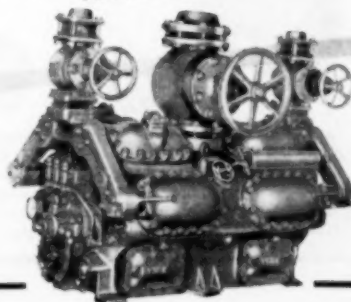
STATE HYDRO-ELECTRIC DEPARTMENT.

Auxiliary generating sets, 625 kVA, two (Con. 169). Pars., also Auckland, Christchurch, London, Paris, Washington, and Montreal. March 13.

Switchgear and steelwork, 110 kV. (Con. 167, 168). Specs. also Auckland, Christchurch. March 6.

Announcing

THE 1951 YORK V/W AMMONIA-FREON COMPRESSOR FOR LOW-COST, EFFICIENT INDUSTRIAL PROCESSING REFRIGERATION



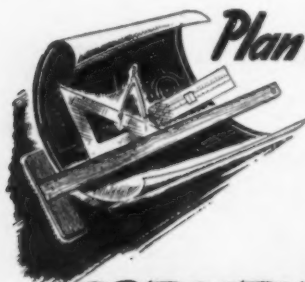
- 1. LOW INITIAL COST.** York's seventy-five years of specialised experience and research result in manufacturing and design improvements that save money.
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- 8. COMPLETE NEW LINE.** The new 1951 York V/W Ammonia Compressors are available in 4, 6, 8, 12 and 16-cylinder models. A wide, varied range with built-in flexible capacities that make them universal in application.



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CURRENT TENDERS

NEW TENDERS

The following tenders have been called since our last issue. Current tenders which have been published in previous issues follow this section.

COMMONWEALTH

POSTMASTER-GENERAL'S DEPARTMENT.

- Cable Identification Sets (Sch. C.6409). Nov. 18.
- Electrical Indicating Meters (Sch. C.6421). Dec. 12.
- High Frequency Radio Telephone Subscribers' Equipment (Sch. C.6435). Dec. 14.
- Mechanics' Tools (Pliers and Screwdrivers), (Sch. C.6418). Nov. 30.

- AUSTRALIAN ALUMINIUM PRODUCTION COMMISSION.
- Grinding Media, 45 tons—Forged Steel Balls (No. M.30). Dec. 18.
- Steam Driven, Direct Acting Molten Pitch Pumps (three), (No. M.31). Dec. 18.

DEPARTMENT OF EXTERNAL TERRITORIES.

- Musical Instruments (Sch. 249). Nov. 14.
- Tinned Fish (Sch. 247). Nov. 14.

DEPARTMENT OF REPATRIATION.

- Druggist Sundries, for R.P.H. Concord—Out-Patients Dept. Nov. 13.
- Dental X-Ray Equipment, for Out-Patients Clinic. Nov. 13.
- Hospital Dressings, for Vic. Branch. Nov. 14.

- DEPARTMENT OF SUPPLY.
- Accumulators. Nov. 23.
- Aluminium Bar. Nov. 21.
- Aluminium Sheet Bar and Tube. Nov. 18.

- Ammonia Pipe Fittings and Thermometers, Purchase of. Nov. 14.

- Brass Bar. Nov. 14.
- Jeep Spare Parts. Nov. 18.
- Mechanical Drawing Presses and Auxiliary Machines, Purchase of. Nov. 16.

- Motor Scythes. Nov. 21.
- Office Requisites. Nov. 14.
- Rubber Conveyor Belt. Nov. 14.
- Radio Plant and Equipment. Dec. 19.

- Trichlorethylene; Faving Paints; Transparent Adhesive Tape; Petrol Resisting Hose Tubing. Nov. 21.
- Woodworking Machines. Nov. 16.

- Worsted Socks, Khaki, 12,348 pairs. Nov. 18.

GOVERNMENT RAILWAYS DEPARTMENT.

- Overalls. Nov. 14.

- STORES, SUPPLY AND TENDER BOARD.
- Paper, for Taxation Dept. (Sch. C.T.B. 924). Nov. 14.

NEW SOUTH WALES

STATE CONTRACTS CONTROL BOARD.

- Beeswax, Field Bars, Leather, Photographic Supplies, and Scientific Apparatus. Nov. 13.
- Buckets and Garbage Tins, Portable Typewriters, Wireless Equipment, Oil-fired and Gas-fired Boilers, Radio and Sound Equipment, Cutlery-Forks and Spoons. Nov. 14.
- Letterpress Printing Ink, Tint Inks, Bale Wrappers and Corrugated Cardboard Containers, for a period of 12 months. Nov. 21.

(Turn to page 79.)

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RESISTANCE WIRE

THE WORLD'S BEST

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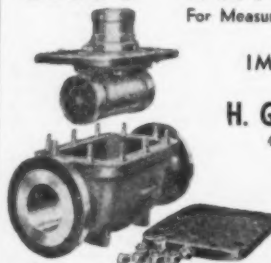
Australian Agents:

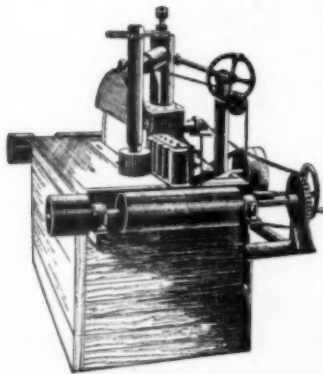
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Of all-steel construction, the National Radial Arm Saw is ideally designed for use in case mills and on medium work. In size, capacity and ease and speed of operation it is specially adapted for the job.

Saw diameter	36in. or 30in.
Shaft diameter	2in.
Speed of saw on rim	10,000 feet per minute
Height of bench	31in.
Table size	54in. x 32in.
Feed roller diameter	6in.
Flat roller diameter	6in.
Quick adjusting roller fence	
Pulley diameter	12in. x 5in. C.F. ball-bearing loose pulley.

The 3-speed gear-box gives feed rates of 60ft., 75ft. and 90ft. per minute. All shafts run on ball-bearings.

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White and Brennan Streets, Leichhardt, N.S.W.

LM 4481-5

NEW TENDERS — Contd.

- Scientific Apparatus (963). Nov. 15.
- Scientific Apparatus and Sorting Machines. Nov. 16.
- Scientific Apparatus. Nov. 23.
- Spray Drying Plant. Nov. 28.

SYDNEY MUNICIPAL COUNCIL.
Petrol/Oil Driven Tractor. Nov. 20.

MISCELLANEOUS.

Cases and Crates, Hydrogen Peroxide, Anhydrous Ammonia, Printed Bags and Wraps, Drums, Casks, Lubricating Oils, for Abattoir Dept. of Newcastle City Council. Nov. 27.

Hard Drawn Bare Copper Cable —5 miles 7/064 H.D.B.C. Cable; 43 miles 7/080 H.D.B.C. Cable; 60 miles 7/104 H.D.B.C. Cable. Copper Cable shall be in accordance with Australian Standard Specification No. C41; 150,000 yards

7/044 P.V.C. Aerial Cable. P.V.C. Cable shall be in accordance with Australian Standard Specification; Watthour Meters (Bakelite Cases) and M.D.I.'s—2,000 only Single-phase, Two-wire 10/40 amp., 240V.; 200 only Two-phase, Three-wire, 10/40 amp., 240V.; 1,000 only Three-phase, Four-wire 10/40 amp., 240V.; 300 only 30 amp. M.D.I.; 200 only 60 amp. M.D.I.; 500 Street Light Fittings, 240V., complete with fuse box, hood, and E.S. holder, for Greater Wollongong City Council. Dec. 1.

Lead Covered Cables, for Tamworth City Council. Nov. 25.

Air Compressor and Accessories; Tractor, with end-loader—3 yd. cap.; Tractor, with 'dozer' blade; Centrifugal pump; Circular saw; Mobile bitumen sprayer, for the Municipality of Woolahra. Nov. 27.

Portable Diesel Engine Driven Compressor, Jackhammers, and

Air Hoses, for Shire of Tweed. Nov. 20.

Road Plant as follows:—One tractor with trail builder equipment, 70/90 h.p.; two Rippers (one to suit 40-h.p. tractor); one 5 cu. yd. Scoop; two light patrol graders; two caravans, suitable for grader (two-berth); two 5 cu. yd. trucks, with Berriman loaders; one sheepfoot roller; one air compressor and jack hammer, for Shire of Gulgong. Nov. 16.

Tractor, about 45-h.p., fitted with angle dozer, blade, cable, or hydraulic controls; one Patrol Grader, 18,000-22,000 lb. tandem drive, full power controls, leaning front wheels; one Mobile Crane, capacity 2 tons, capable of being readily converted as end loader; two

2-ton motor chassis, fitted with 3 cu. yd. tipping bodies, for Shire of Hornsby. Nov. 27.

Venturi Meter, for Water Supply Piping at Tomago (Con. 696). Hunter District Water Board. Dec. 12.

VICTORIA

CITY OF MELBOURNE.

Air Circuit Breakers and Current Transformers (Spec. 740E). Nov. 23.

MELBOURNE HARBOUR TRUST COMMISSION.

Mild Steel Reinforcing Rounds. Dec. 1.

(Turn to page 80.)

IMPROVE YOUR PLANT EFFICIENCY

WE HAVE HAD A LONG EXPERIENCE IN THE DESIGN AND MANUFACTURE OF

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Let us study your plant and make suggestions for increased production at Lower Cost.

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HARRINGTON INDUSTRIAL PISTON RINGS (up to 42in.).

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OIL BURNERS, BLOWERS, Etc., Etc.

27 BOURKE ROAD,
ALEXANDRIA, N.S.W. TEL. MX 1151

NEW TENDERS - Contd.

Radar Equipment in the S.H.B.
Extended from Nov. 3 to Nov. 17.

MELBOURNE AND METRO- POLITAN BOARD OF WORKS.

Hydraulically Operated Tilt and
Angle Dozer Attachment to D.D.H.
Tractor. Dec. 19.

Portable Air Compressors (6).
Dec. 19.

PUBLIC WORKS DEPART- MENT.

Central Heating System. Nov.
21.

STATE ELECTRICITY COM- MISSION.

Extension of Cable Store Run-
away, for Richmond Power Sta-
tion Area (Spec. 50-51/149). Nov.
15.

Mine Winders - Electrically
Driven-3 ton (Spec. 50-51/75a).
Nov. 22.

Lathes, for Maintenance Work-
shops (Spec. 50-51/173). Dec. 8.
Transformers and Spares (two).
(Spec. 50-51/168). Feb. 7.

STATE RIVERS AND WATER SUPPLY COMMISSION.

Hydraulic Scraper Hauler Unit,
Concrete Vibrator Units (14).
Petrol Driven. Nov. 21.

Pneumatic Vibrators (6). Nov.
21.

MISCELLANEOUS.

Internal Dia. Pressure Water
Pipes-18 in., 15 in., 9 in., 6 in.,
4 in., and 1 1/2 in. (Con. No. 234), for
Geelong Waterworks and Sewer-
age Trust. Nov. 21.

Road Roller (I.C. Engine) of 6
to 8 ton, Bitumen Sprayer, 80 gal.
capacity, and Trailer Caravan, for
Shire of Broadmeadows. Nov. 29.

♦ ♦ SEE ALSO ♦ ♦
"LATE OPEN TENDERS"

QUEENSLAND

STATE ELECTRICITY COM- MISSION.

Evaporator, for Boiler Feed
Make-up, for Mackay City Council.
Jan. 24, 1951.

STATE WORKS DEPART- MENT.

Steel Frame Windows, for Men-
tal Hospital, Charters Towers.
Dec. 6.

WEST AUSTRALIA

GOVERNMENT TENDER BOARD.

Automatic Telephone Exchange
(Sch. 529A). Dec. 14.

(Turn to page 81.)

MINERALS PTY. LTD.

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Industrial Earths and Wood Flour Millers.

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For all Industries



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WHAT happens when a plant is air conditioned? On the human side, comfortable workers will be able to do more with less effort. They will be less likely to absent themselves. It will be easier to obtain staff. They will be less likely to move to apparently greener pastures.

Precise machinery will not be subjected to radical changes in temperature and humidity. It will be less likely to get out of adjustment. It will "sweat" less . . . corrode less. It will produce a more uniform product.

Air conditioning can keep raw materials uniform, too. And contribute to a more uniform product. Textiles, pharmaceuticals, paper and sweets (to mention a few) may be affected adversely by fluctuating temperatures and humidities. They may turn soft . . . may take on moisture . . . may "spoil."

Over-all, air conditioning removes many of the variables previously introduced by the passing of the seasons, hot spells, rainy spells and changing winds in industrial atmospheres. Why not let a Carrier representative explain the definite advantages and savings to be gained by using Carrier Air Conditioning?

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Brisbane, Qld.
Phone: B 8148.

NEW TENDERS - Contd.

Copper Conductors and Insulator Hardware (Sch. 570a). Nov. 23.
Fire Fighting Equipment (Sch. 533a). Nov. 23.
Transformers—500 KVA and 750 KVA (Sch. 544a). Dec. 7.
Wheel Mounted Mobile Crane (Sch. 527A). Dec. 14.

CURRENT TENDERS

The following tenders have appeared in previous issues and are still current.

COMMONWEALTH

POSTMASTER-GENERAL'S DEPARTMENT.

B.P.O. Standard Uniselecter Maintenance Parts (Sch. C.6426). Jan. 16.

Bimotional Switch Wiper Assemblies and Parts (Sch. C. 6436). Dec. 19.

Bolts, Hexagon or Square Head or Cuphead (Sch. C.6449). Nov. 16.

Broadcasting Transmitters, Radio Telephone (Sch. C.6435). Dec. 14.

Cable Identification Sets (Sch. C.6409). Nov. 16.

Communication System between Sydney and Melbourne (Spec. C. 8157). Extended to Jan. 18, 1951.

Compressed Gases (Sch. C.6455). Nov. 9.

Enamelled Signs (Sch. C.6459). Nov. 21.

Lead Seals (Sch. C.6480). Nov. 30.

Machine Telegraph Equipment (Sch. C.6446). Dec. 5.

Material for Steel Radio Aerial Towers (Sch. C.6427). Nov. 18.

Machine Tools, for Postal Workshops (Sch. Q.109). Nov. 21.

Mechanics Tools, Gauges, etc. (Sch. C.6411). Nov. 23.

Nuts and Washers (Sch. C. 6451). Nov. 14.

Pliers and Screwdrivers (Sch. C.6418). Nov. 30.

Portable Power Driven Saws (Sch. C.6453). Nov. 14.

Power Rectifiers (Sch. C.6444). Nov. 14.

Printed Forms (Sch. C.6461). Nov. 9.

Protective Apparatus (Sch. C. 6462). Jan. 23.

Receivers and Parts (Sch. C. 6296). Dec. 7.

Relay Strips and Mountings (Sch. C.6419). Dec. 7.

Resistors and Reactances (Sch. C.6437). Dec. 19.

Solder (Sch. C.6458). Nov. 21.

Spanners (Sch. C.6434). Dec. 19.

Sub-Station Accessories (Sch. C. 6420). Dec. 7.

Switchboard Keys (Sch. C.6404). Nov. 16.

Teleprinter Table and Silence Covers (Sch. C.6439). Nov. 28.

Television Installation at Sydney (Sch. C.6423). Nov. 21.

Tinware (Sch. C.6456). Nov. 16.

Tools-Adjusters and Benders (Sch. C.6429). Dec. 14.

Tools, for Mechanics, Exchange and Sub-station Maintenance (Sch. C.6416). Nov. 30.

(Turn to page 82.)



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Supplied in 4-oz. tubes, pint, quart, gallon and 4-gallon tins

REPAIRS EVERYTHING

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AGENTS IN ALL STATES.

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CURRENT TENDERS — contd.

Transformers (Sch. C.6398). Nov. 18.

AUSTRALIAN ALUMINIUM PRODUCTION COMMISSION.

Air Compressors (2), 600 C.F.M. (Spec. M.29). Dec. 11.
Apron Feeder, 75 tons per hour (Spec. M.25). Nov. 13.
Diesel Motor Trucks, heavy-duty (Spec. M.24). Nov. 13.
Galvanised Steel Cable Trays (Spec. E.30). Nov. 20.
Kier Slurry Pumps (Spec. CH. 9). Nov. 13.
Mild Steel Billets, 450 tons 4 in. x 4 in. (Spec. M.28). Nov. 13.
Rail Track Tippler, 140 deg. (alternatively 50 deg.). (Spec. M. 26). Nov. 20.
Switchyard Steel Rails, 27 tons (Spec. E.28). Nov. 13.
Water Piping, 16,300 ft. (from 6 in. to 1 in.). (Spec. C.7). Nov. 13.

DEPARTMENT OF CIVIL AVIATION.

Approach Light Fittings, high intensity (Sch. 308). Nov. 14.
Master Time Clock Systems and Associated Slave Equipment. Jan. 30.
Rotating Light Beacons, for Airport (Sch. 307). Nov. 14.
Tubular Steel Masts or Component Parts, for Rhombic Aerials (Sch. 314). Nov. 28.

DEPARTMENT OF WORKS AND HOUSING.

2 Plate Electric Stoves (1,000), for Canberra. Nov. 21.
Air-conditioning Plant, for Woolloomooloo Telephone Exchange. Nov. 21.
Air Conditioning System, for Fivedock. Nov. 14.
Aluminium Screen and Doors, for Administrative Building, Canberra, Supply and fix. Nov. 28.
Cabinet Refrigerator, 40 cub. ft., for Students' Hostel, Canberra. Nov. 14.

Circular Beef Splitting Saw, Gambrel Cleaning Machine, and Grindstone, for Canberra Abattoirs. Nov. 21.

Counter Type Refrigerator, for Cadets' Block, R.M.C., Duntroon, A.C.T. Nov. 14.

Counter Type Refrigerator, for Students' Hostel, Forestry School, Canberra. Nov. 14.

Disintegrator Pumping Units and Incidental Equipment, for Nightsail Depot, Arncliffe. Nov. 15.

High Tension Underground Cable and Joint Boxes, for Canberra. Nov. 28.

Indoor Ring Main Units, for Electricity Supply, Canberra. Dec. 5.

Kitchen Type Food Mixer, for Forestry School, Canberra. Nov. 14.

Kitchen Ventilation Plant, for Forestry School, Canberra. Nov. 14.

Low Tension Underground Cable and Joint Boxes, for Canberra. Nov. 28.

Mild Steel Kiosk Shells (6), for Electricity Supply, Canberra. Dec. 5.

Oil Fired Multi-tubular Steam Boilers and Ancillary Equipment, for Princess Juliana Hospital, Turramurra. Nov. 21.

Outdoor High Tension Switchgear, for Electricity Supply, Canberra. Dec. 5.

Pumping Plant, for Bogan Gate, N.S.W. Nov. 14.

Steel Roller Shutters, Supply and fix, for Administrative Offices Building, Canberra. Nov. 21.

Stone Planing Machines (4), for Stone Yard, Canberra. Dec. 12.

Wrought Iron Railing, Supply and fix. Nov. 14.

GOVERNMENT RAILWAYS DEPARTMENT.

Covered Goods Wagons. Extended to Nov. 21.

Diesel Electric Locomotives, 3 ft. 6 in. Jan. 9.

Diesel Electric Locomotives, Nov. 14.

(Turn to page 83.)

VANE ELECTRICAL TACHOMETER

Advantages:

- Easy, quick attachment to battery ignition engines.
- Steady, accurate reading under all conditions.
- No mechanical wearing parts.
- Large scale moving coil meter.



Ideal for installation to marine craft, automobiles, stationary engines, etc.
Available in models to suit 4 cyl. 6 cyl. and 8 cyl. engines.
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TIME STAMPS

Are essential for keeping an accurate check on receipt of correspondence, orders, etc.

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Spray Painting and Finishing Equipment.

CURRENT TENDERS - contd.

Horizontal Boring Machine. Dec. 12.
Open Goods Waggon; Freight Car Bogies. Extended to Nov. 21.
Railway Wheel and Axle Lathes. Nov. 14.
Sleeping Cars. Dec. 12.
Tyres, for Rolling Stock. Nov. 21.

STORES, SUPPLY AND TENDER BOARD.

Disinfectants (Sch. C.T.B. 915). Nov. 23.
Lead; Paint Oil; Varnish (Sch. C.T.B. 921). Nov. 23.

STATES

NEW SOUTH WALES

GOVERNMENT RAILWAYS DEPARTMENT.

Air Break Isolating Switches (241), Outdoor Manually and Power Operated; current ratings, 300-1,200 amperes at voltages 33 k.v. to 132 k.v. (Spec. 1270). Nov. 15.
Axles, for Locomotives, Tenders and Carriages (Sch. 133). Dec. 31.
Circulating Water Screening Plant, for Lake Macquarie Power Station (Spec. 1277). Dec. 20.

Disconnecting Switches (Quot. CE-1299). Nov. 23.
Electric Motors, 50 h.p., totally enclosed Crane Type (C.E.1607). Nov. 16.
Four-wheel Brakevans (46), (Spec. 2207). Nov. 22.
Indicating and Recording Instruments, Summation and Remote Metering Protective Relays, Regulating and Rheostat Equipment, and Current Transformers, for Lake Macquarie Power Station (Spec. 1276). Dec. 13.
Multi-cylinder Compression Ignition Oil Engines, flat type (17), approx. 250 B.H.P. at 1,500 R.P.M., and Hydraulic Torque Converters (Spec. 2212). Dec. 6.
Overhead Wiring Equipment, for the Electrification of Railways Tracks. Jan. 24.

Roller Steel Tyres, for Locomotives, Tenders, Carriages and Waggon (Sch. 131). Dec. 31.
Sawdust, Annual Contract (Sch. 146). Dec. 31.
Truck Weighbridges, 35-ton (16), with platforms 18 ft. long by 6 ft. 6 in. wide, equipped with dial indicators and recording heads. Dec. 6.

DEPARTMENT OF PUBLIC WORKS.

Altitude Control Valves (3), for Bowraville and Nambucca Heads Water Supply. Nov. 27.
Asbestos Covered Braided Cable, 23/0076, 3-core. Nov. 17.
C.S. Spur Wheel. Nov. 15.

(Turn to page 84.)

FOR ALL TUBE AND PIPE BENDING PROBLEMS

Specialists in

Steam and Refrigeration Coil Making
General Pipe Bending and Coppersmithing

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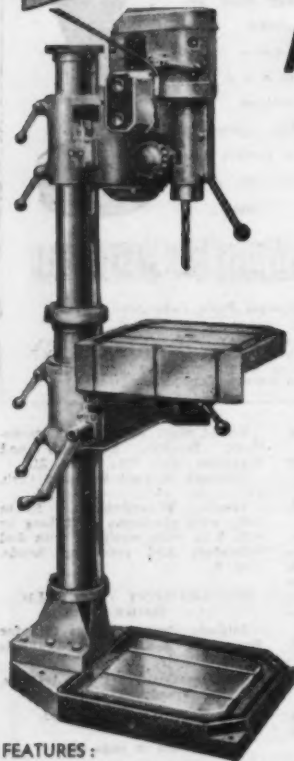
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ALL-GEARED 1" DRILLS

FEATURES:

- All-geared pedestal drill.
- No. 3 Morse Taper.
- Capacity: 1/2 in. to 1 in.
- Swivelling Square Table with Side Fixing.
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CURRENT TENDERS - contd.

Electric Lighting Plant, for Quirindi Aboriginal Station. Nov. 20.

Electrically-driven Bore, for Mendooran Water Supply. Jan. 15.

Exhaust Fan. Nov. 22.

Flats, M.S. Nov. 15.

Felt-Bituminous Floor. Nov. 18.

Filtration Plant. Dec. 1.

Hand Shears. Nov. 17.

Lightning Arresters. Nov. 29.

Passenger Lift, electrically-operated, for Royal Hospital for Women, Paddington. Nov. 13.

Pneumatic-tyred Tractor. Nov. 15.

Portable Sucker Unit. Nov. 17.

Propellor-type Fans. Nov. 15.

Pumping Plant, Electrically Driven (Spec. 117-49/50), for Alstonville Water Supply. Nov. 20.

Regulating Transformers, 11-6.6 KV, for Southern Electricity Supply. Nov. 13.

Sink and Drainer, S.S. Nov. 15.

Spur Wheel, C.S. Nov. 15.

Stainless Steel Sink and Drainer. Nov. 15.

Tan Bark (10 cub. yds.). Nov. 17.

Tool and Cutter Grinding Machine. Nov. 15.

Water Meters (4), for Reticulations, for Nambucca Heads Water Supply. Nov. 27.

Wrought Iron Gates. Nov. 15.

X-Ray Unit and Accessories, for Mudgee District Hospital. Nov. 13.

DEPARTMENT OF WORKS AND HOUSING.

Mechanical and Hot Water Installations, at Kapooka Immigration Holding Centre, Wagga. Nov. 21.

DEPARTMENT OF ROAD TRANSPORT AND TRAMWAYS.

Underground Cable, Multicore Steel Wired Armoured Jute, served and impregnated, for Electromotive Traffic Signals (Spec. S-573). Nov. 13.

DEPARTMENT OF SUPPLY AND DEVELOPMENT.

Automatic Ice Cream Machines. Nov. 14.

Automatic Telegraph Equipment. Nov. 30.

Empty Formic Acid Carboys, Purchase of, from Chester Hill. Nov. 14.

Steam Jacketed Stockpots. Nov. 14.

Table Fans. Nov. 16.

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Baths, 30; Basins, 54; Sinks, 10. All C.I.P.E.; Brackets, 54, for Basins, for Moore Park. Nov. 14.

Centrifugal-type Pumping Units, electrically-driven, for Bonnyrigg Pumping Station (Con. 2451). Dec. 12.

Galvanised Wire Netting, approx. 6 miles 12 in. x 1 1/2 in., and approx. 3 miles 36 in. x 1 1/2 in., for Guildford (Quot. 8257). Nov. 15.

Pneumatic-tyred Mobile Cranes (2), new or second-hand (P.T. 375). Nov. 24.

Vertical Spindle Centrifugal-type Sewage Pumping Units, electrically driven, for low level Pumping Station, No. 119 (Con. 2965). Dec. 12.

STATE CONTRACTS CONTROL BOARD.

Bale Boards and Reel Ends, Purchase of. Nov. 21.

Corrugated Cardboard Containers. Nov. 21.

Letterpress Printing Ink. Nov. 21.

Monotype and Linotype Metal, Purchase of. Nov. 21.

Oil-fired Boiler; Gas-fired Boilers. Nov. 14.

Spray Drying Plant. Nov. 28.

Wireless Equipment. Nov. 14.

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CURRENT TENDERS - contd.

MISCELLANEOUS.

Crawler Tractor, approx. 40 h.p., equipped with suitable Angle Blade Bulldozer, for Municipality of Casino. Nov. 14.

Metal-Clad Switchgear, 11,000-volt, and L. T., for Clarence River County Council (Spec. 95/50). Dec. 20.

Motor Patrol Grader, approx. 20,000 lb. weight, having tandem drive, for Shire of Tomkl. Dec. 7.

Outdoor Oil Circuit Breakers (11), 33,000 volt, for Newcastle City Council. Extended to Nov. 27.

Overhead Travelling Crane, 130-ton, for Snowy Mountains Hydro-Electric Authority (Con. 5003). Nov. 13.

Overhead Travelling Crane, 85-ton, for Snowy Mountains Hydro-Electric Authority (Con. 5004). Nov. 13.

Pumping Plant, deep-well type, electrically-driven, for Cooma Water Supply Augmentation (Spec. 120-49/50). Dec. 18.

Pumping Plant, electrically-driven Bore Hole Type, for Menadran Water Supply (Spec. 114-49/50). Jan. 15.

Switchboard, 11,000-volt, for Sutherland Shire Council. Nov. 27.

VICTORIA

GOVERNMENT RAILWAYS DEPARTMENT.

Battery Chargers (Con. 58,611). Nov. 15.

COAL & COKE

for Manufacturers, Blacksmiths, etc.

BEST STEAMING COAL
for all classes of Boilers and Household purposes

PROMPT DELIVERY

JONES BROS. COAL

PTY. LIMITED

Bridge Road, Pyrmont,

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Galvanised Iron Sheets (Con. 58,608). Nov. 29.
Lead Acid Batteries. Nov. 15.

CITY OF MELBOURNE.
Air Circuit Breakers and Current Transformers (Spec. 740/E). Nov. 23.
Street Lighting Lanterns (Spec. 735/E). Dec. 4.

DEPARTMENT OF PUBLIC WORKS.

Boiler House Auxiliaries and Soot Arresters in new Boiler House, Coburg. Nov. 14.

Central Heating, for Consolidated School, Kaniva. Nov. 14.

Fuel Hot-water Service, for Hastings. Nov. 14.

Septic Tank, new Water Service, etc., for Healesville. Nov. 14.

Sector Type Spillway Gates (8), 28 ft. x 23 ft., for Somerset Dam. Nov. 27.

DEPARTMENT OF SUPPLY.

Reproduction of Pamphlet No. 3. Nov. 14.

DEPARTMENT OF WORKS AND HOUSING.

Structural Steel Work, for Essendon. Nov. 14.

GRAIN ELEVATORS BOARD.

Overhead Crane Type Runways, Structural Steel supplied. Nov. 27.

MELBOURNE AND METROPOLITAN BOARD OF WORKS.

Compression Testing Machine, for Concrete, 100-ton. Nov. 21.

Crawler Mounted Continuous-bucket Excavator. Nov. 21.

Crawler Tractors (20), Class 1, 3 and 4, with Dozer Blades and Power Control Units. Nov. 21.

Hexagonal Black Nuts, 150,000 1/2 in. and 100,000 3/4 in. dia., British Whitworth Standard B.S.S. 23/1932. Nov. 21.

Overhead Air-operated Hoist (Tender No. 1808). Nov. 20.

Portable Concrete Mixing Sets, (6), 81 cub. ft. Nov. 21.

Snap Steel, Purchase of. Nov. 13.

Second-hand Miscellaneous Plant, Purchase of. Nov. 13.

Tractor-type Front-end Loaders (6). Nov. 21.

(Turn to page 86.)



Single or double joint-Sir?

We can offer the unique "W" type Universal Ball Joints in types and sizes to meet most transmission needs. Our representatives are available to assist you whenever the design calls for taking rev's round awkward corners, or where rotating shafts require pliability. The Centre Line no longer enslaves your designer where "W" type joints are incorporated.

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MELBOURNE AND METROPOLITAN TRAMWAYS BOARD.

Stationary Air Compressor, 600 cub. ft. (Tender 1605). Nov. 11.
Ticket Issuing Machines (Tender 1607). Nov. 15.

POSTMASTER-GENERAL'S DEPARTMENT.

Drain Pipes (Sch. V.416). Nov. 14.
Packing Cases (Sch. V.420). Nov. 21.
Savings Bank Counter Screens (Sch. V.415). Nov. 14.

STATE ELECTRICITY COMMISSION.

Bunker Discharge Dredgers and Brown Coal Bunkers (Spec. 50-51/148). Nov. 29.
Coal Crushing and Screening Plant (Spec. 50-51/153). Dec. 6.
Cold Sawing Machines (Spec. 50-51/156). Nov. 22.
Copper Conductors and Trolley Wire. Nov. 29.
Dial-type Milling Machines (Spec. 50-51/162). Nov. 29.
Horizontal Boring and Facing Machine. Nov. 29.
Lathes, for Maintenance Workshops (Spec. 50-51/155). Nov. 22.
Lathes, for Central Base Workshops (Spec. 50-51/147). Nov. 22.
Metal Plant Switchgear and Accessories, 20 KVA, 25 Cycles (Spec. 50-51/100). Nov. 22.
Paper Double Braided Aerial Cable (Spec. 50-51/101). Nov. 15.
Paper and Varnished Cambric Insulated Cable. Feb. 7.
Plate Girder Bridges (Spec. 50-51/116). Nov. 22.
Pneumatic Power Hammer (Spec. 50-51/163). Nov. 29.
Portable Generating Sets (Spec. 50-51/150). Nov. 22.
Radial Drilling Machines (Spec. 50-51/161). Nov. 15.
Single Phase, A.C. Kilowatt Hour Meters (Spec. 50-51/111). Nov. 15.
Sleeper Plates, for Movable Rail and Dredger Tracks. Nov. 8.
Shaping and Slotting Machines (Spec. 50-51/154). Nov. 22.
Steel Forms and Concrete Buckets. Nov. 15.
Teleprinter Machines (Spec. 50-51/119). Jan. 17.
Trailing Cable, V.R.L. T.R.C.S., 6.6 K.V. (Spec. 50-51/68). Nov. 15.

STATE RIVERS AND WATER SUPPLY COMMISSION.

Motor Truck Chassis, 5/6 ton cap. Nov. 21.

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CURRENT TENDERS — contd.

Road Tanker Motor Truck, 1,000 gallon cap. Nov. 21.

Water Tank, 1,000 gallon cap. supply and fit to 6-ton Motor Chassis. Nov. 21.

MISCELLANEOUS.

Automatic Traffic-Control Light System, Supply and Installation, for City of Camberwell (Con. 6/51). Nov. 13.

Power Grader, with kerosene-operated motor; Concrete Mixer, 3½ cub. ft., pneumatic tyred trailer type, for Shire of Bannockburn. Nov. 13.

Trench Cutting Machine and Spare Parts; Portable Air Compressor Plant, complete with Accessories; Pressure Water Pipes, 4 in. and 1½ in. Internal Dia., for Geelong Waterworks and Sewerage Trust. Nov. 21.

QUEENSLAND

BRISBANE CITY COUNCIL.
Electrical Indicating Instruments. Nov. 14.
Lighting Arresters (Con. E.24/1950). Dec. 15.

DEPARTMENT OF PUBLIC WORKS.

Overhead Travelling Crane, hand-operated, 15-ton, for Hydro-Electric Power House, Somerset Dam. Dec. 18.

Spillway Gates (3), Sector Type, 20 ft. x 23 ft., for Somerset Dam. Nov. 27.

STATE ELECTRICITY COMMISSION.

Air Break Switches and Earth Leakage Protection Equipment (Spec. 223). Extended to Nov. 15.

Crane Runway (Spec. 172). Nov. 15.

Evaporator, for Boiler Feed Makeup (Spec. 250). Jan. 24.

Main Transformers, 122, 66, 22, 11 and 5.5 kV. (Spec. T/F.2). Dec. 13.

Oil-Engine-driven Electrical Generating Plant (Spec. 240). Dec. 6.
Oil Storage Tanks (Spec. 242). Nov. 22.

Switchgear: (132, 66, 22, 11 & 5 kV), Relays and Carrier Current Communication Equipment (Spec. T.F./3). Extended to Jan. 17.

Transformers, 3 phase and single phase (Spec. 241). Dec. 6.
Turbo-Alternators (3), water-driven, 11,000 V., 18,000 kW (Spec. T/F.1). Nov. 29.

Water Tube Boilers (Spec. 234). Extended to Nov. 15.

Wood Burning Gas Producers (Spec. 247). Dec. 20.

STATE STORES BOARD.

Grab Crane, 3 cub. yd. cap.; Mud Bucket, 3 cub. yd. cap.; Heavy Plate Grab Bucket. Nov. 14.

MISCELLANEOUS.

Fabricated Structural Steel Towers (Spec. 197/50), for Townsville Regional Electricity Board. Dec. 4.

Plan Printing Machines, for Cairns Regional Electricity Board (Con. L.50/21). Jan. 23.

Switchgear, Relays and Instruments, for Cairns Regional Electricity Board. Dec. 6.

Switchgear, 22,000 and 6,000 volt., for Cairns Regional Electricity Board (Con. L.50/20). Dec. 13.

SOUTH AUSTRALIA

DISTRICT CONTRACT BOARD.

Combined Surfacers and Thickener, 1 No. Nov. 16.

Vertical Spindle Moulding Machine, 1 No. Nov. 16.

SUPPLY AND TENDER BOARD.

Canting Spindle Dimension Saw, 18 in. Nov. 13.

Flaw Detector, supersonic. Nov. 13.

Recording Instruments, for Gellier Muller Monitors (3). Nov. 13.

Rotary Drilling Machinery. Nov. 13.

CURRENT TENDERS - contd.

WEST AUSTRALIA

GOVERNMENT TENDER BOARD.

Cast Manganese Steel Railway Crossings. Dec. 21.
Copper Conductors and Insulator Hardware (Sch. 570A). Nov. 23.
Forging Machine, for Railways. Nov. 16.
Mobile Crane, Wheel Mounted. Dec. 14.
Railway Wagon Equipment. Dec. 7.
Steam Raising Plant, for Colliery Power Station. Dec. 14.
Steel Sections, for Railways. Nov. 16.
Telephone Exchange, automatic. Dec. 14.

TASMANIA

HYDRO-ELECTRIC COMMISSION.

Crusher Plant Feeders (C.E. 215). Nov. 22.
Pneumatic Concrete Placing Gun (C.E. 190). Nov. 15.
Side-Tipping Mine Cars, Branch-Type, 4-cub. yd. cap. (12). (C.E. 221). Nov. 21.

DEPARTMENT OF RAILWAYS—NEW SOUTH WALES.

TENDERS enclosed in sealed envelopes which must be endorsed "TENDER FOR . . .", addressed to the Commissioner for Railways, 19 York Street, Sydney, will be received on the dates and times shown for services specified. Tenders may be lodged in the Tender Box, Room 504A, 5th Floor, Railway House, 19 York Street, Sydney, or posted to the above address.

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HYDRO ELECTRIC DEPARTMENT.

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Synchronous Condensers (2), 30,000 KVA. Nov. 21.

MINISTRY OF WORKS.

Steam and process piping, valves, and storage tanks. Nov. 14.

MISCELLANEOUS.

Filtration Plant (Con. 126). Nov. 28.

Late Open Tenders

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DEPARTMENT OF WORKS AND HOUSING.

Mattress Disinfecter, for Princess Juliana Hospital, Turrumurra. Dec. 8.

DEPARTMENT OF SUPPLY.

Accumulators; Standard Pantograph Engraving Machine. Nov. 23.

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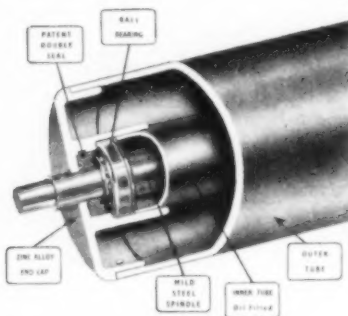
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- ★ At left is a conveyor length made up with Huwood FT Sections. The roller sets are placed 4' 6" apart, and each 9' section carries two roller sets.
- ★ Top right photograph shows a Huwood Belt Conveyor handling loose material.



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